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ABSTRACT

The guide was designed to provide basic information for administrators, teachers, students, and related personnel to develop new safety programs and to improve existing programs in Hawaii public schools. The loose-leaf format permits later upgrading and changes. The basic components of the program are the teacher, student, facility, and equipment. The guide is illustrated with diagrams, drawings, and photographs throughout and is primarily arranged in outline form. A bibliography and appendices of policies, forms, films, and Red Cross visualizations are added. (MS)

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OFFICIAL

INDUSTRIAL EDUCATION SAFETY INSTRUCTIONAL GUIDE

STATE OF HAWAII ■ DEPARTMENT OF EDUCATION ■ HONOLULU

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EMERGENCY ACTION

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I. PROCEDURES FOR SERIOUS INJURY

A. Stop the Bleeding

1. Use compress.
2. Do not use tourniquet unless qualified.

B. Treat for Shock

1. Keep victim warm.
2. Do not move victim if major bone fracture is likely (falls, collisions, etc.).

C. Call for Professional Aid or Ambulance, as appropriate.

If situation cannot be controlled until professional arrives, call ambulance first.

II. NOTIFY SCHOOL OFFICE IMMEDIATELY

Communications sequence should be prearranged.

* * * *

INSTRUCTIONS FOR TEACHER:

1. This poster should be posted in a conspicuous place in all Industrial Education work areas where it will not be hidden or obstructed from view.
2. Your students should be aware of this poster and understand all the instructions thereon.

CE 000 579

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1. This poster should be posted in a conspicuous place in all Industrial Education work areas where it will not be hidden or obstructed from view.
2. Your students should be aware of this poster and understand all the instructions thereon.

CUT AND ATTACH TO PHONE. ADD PREFIXES IF ANY.

Date: ____________

EMERGENCY NUMBERS

PRINCIPAL............ ____________
DOCTOR............... ____________
(Dr. ________________)
AMBULANCE............ ____________
FIRE................. ____________
POLICE............... ____________

Date: ____________

EMERGENCY NUMBERS

PRINCIPAL............ ____________
DOCTOR............... ____________
(Dr. ________________)
AMBULANCE............ ____________
FIRE................. ____________
POLICE............... ____________

Date: ____________

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Date: ____________

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PRINCIPAL............ ____________
DOCTOR............... ____________
(Dr. ________________)
AMBULANCE............ ____________
FIRE................. ____________
POLICE............... ____________

FOREWORD

The safety of the individual is a responsibility that must be shared by all members of this society. A safe environment requires individuals to be totally involved and consciously committed to safe practices in our daily lives. The Industrial Arts and Industrial-Technical Occupations teachers play a vital role in cultivating safe work habits and attitudes due to the very nature of the mode of their instruction.

The purpose of this publication is to provide administrators, teachers and students with a basic guide for safety education in our schools. Specifically, this guide will:

1) Provide teachers with information on appropriate reference forms.
2) Serve as a catalyst in organizing safety programs.
3) Allow for active participation by students in their safety program.
4) Allow for new input from concerned individuals to meet the needs of a dynamic student population.

This publication should not be construed as an all-encompassing safety program in itself; moreover, it should be recognized as a vehicle for bringing about improvements in our safety education programs. The loose-leaf format of this guide allows for active involvement by personnel at all levels to keep it current and sensitive to the needs of the students.

Shiro Amioka

SHIRO AMIOKA
Superintendent of Education

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Dole Corporation, 650 Iwilei Road, Honolulu, HI 96817

Hawaiian Airlines, Honolulu International Airport, Honolulu, HI 96819

Hawaiian Electric Company, Inc., 820 Ward Avenue, Honolulu, HI 96814

Hawaiian Sugar Planters Association, 1527 Keeaumoku Street, Honolulu, HI 96822

Hawaiian Telephone Company, 1130 Alakea Street, Honolulu, HI 96813

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Mrs. Sharon Gau, U. S. Department of Labor, Room 505, Melim Building, 333 Queen Street, Honolulu, HI 96813

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INTRODUCTION

Rapid socio-economic changes and technological advancements in society have brought about substantially increased demands on various institutions to focus upon the world in which we live and to put forth energies to preserve the balance in our ecosystems. For example, the population is being concentrated in relatively limited land areas, this congestion in turn creates psychological and physical hazards and therefore, individuals run higher risks of becoming victims of accidents.

The constant interface of activities between man and technology deserves much consideration. As responsible agents in our society we need to focus on safety not only in terms of the classroom, school or district, but as being a part of an entire system.

The purpose of this guide is to provide all personnel involved and charged with the responsibility of providing a safety program in our schools with statewide delivery system for basic kinds of safety information. The loose-leaf format of this guide was designed with constant upgrading in mind.

Successful programs require active participation by all concerned persons. All too often major contributions are overlooked for the lack of appropriate communication devices. Therefore, new input is solicited as there will always be a need for upgrading safety programs.

The scope of this guide includes the four basic components of the program, which are: the teacher, student, facility, and equipment. However, it should not be construed to be limited to these areas. This basic structure shall serve as the core from which branching systems shall be derived. The intent was not to build an awesome, all-encompassing framework but to allow for the incorporation of changes to meet the changing needs.

As professionals, contributions must be made on the policy-making level. All timid verbal activity within the field should cease to embark upon a venture to stimulate positive actions to meet, if not exceed, the needs of the learner.

OBJECTIVE
0.0

0.0. OBJECTIVES

Teachers in Industrial Education or other laboratory-oriented programs should be totally committed to the concept of safety not only within the laboratory but also off campus as well. The main objective, therefore, lies in the commitment to provide for and maintain conditions pertinent to the safety and welfare of every student and teacher in Industrial Education.

0.1. STATEMENT

The guide herein was designed to provide basic information for administrators, teachers, students and related personnel to develop new and improve existing safety programs in Hawaii public schools.

0.2. PERFORMANCE REQUIREMENTS

0.2.1. To help plan, organize and implement an effective safety program.

0.2.2. To provide the foundation for revisions and updating.

0.2.3. To assist teachers in locating resource materials.

TEACHER
1.0

1.0. THE TEACHER

The teacher, as a supervisor of industrial activities within the school, should take the initiative to install and maintain a comprehensive safety program for the benefit of his students and in turn, himself. There is no single approach to safety programs. Each individual teacher is expected to determine what needs to be done to maintain a balanced program in his own school situation.

This section was organized primarily as a briefing on particular points with which teachers should be familiar. The authors realize that there are many excellent safety programs in existence and those teachers who wish to contribute to this guide may do so by mailing suggestions to:

MR. FRANK N. KANZAKI
Program Specialist
Industrial Arts Education
Department of Education
P. O. Box 2360
Honolulu, Hawaii 96804

Some of the points covered in this section are: major responsibilities, emergency procedures, liability, accident factors, accident reports, and a suggested safety program.

1.1. EMERGENCY PROCEDURES

The following arrangements should be made before school opens every year. See 6.1.1., 6.1.2., and 6.1.6. Appendices.

1.1.1. COMMUNICATIONS

1. Emergency procedures should be discussed with your department head, principal, school secretary and nurse. If there are any changes in status of employment of above, be sure procedures remain intact. The principal shall designate a responsible agent to take action in his absence.

2. Order of notification under following conditions:

    1. If serious injury (uncontrollable situation)
        1. Ambulance (for the best interest of student)
        2. Principal and/or designee who will contact:
        3. Parents

    2. If serious injury (controlled situation)
        1. Principal and/or designee who will contact:
        2. Parents

    3. If minor injury teacher will notify
        1. Principal and/or designee who will contact:
        2. Parents

3. Location of telephone.

    1. Each shop should have an extension phone for campus and off-campus communications.

    2. It is essential for the Industrial Education department head to have a telephone extension. (A direct line is preferred.)

    3. All students shall know the location of the telephone.

    4. Emergency numbers should be posted properly for immediate access. If outside calls require "dialing 9" etc., affix information to prevent confusion.

4. Keep a card file of all students in your class with names and telephone numbers of parents or guardian and family doctor to be notified in case of injury.

1.1.2. FIRST AID

1. General

   Every teacher involved with Industrial Arts or Vocational Education should receive training in first aid procedures. Contact your local chapter of the American Red Cross for more information.

2. Administering

   1. First aid should be administered by qualified personnel only.

   2. "Under no circumstances may school personnel diagnose illness, prescribe or administer medication for any sort to pupils." See 6.1.2. Appendix.

   3. When attending to accident victim, disperse crowd if accident is serious and keep surrounding area quiet to prevent further anxieties on the victim's part.

   4. Secure proper medical attention for individuals with cuts, punctures or serious abrasions as a result from contact with metal.

   5. Remember the basic procedures for treating serious accidents:

      1. Stop the bleeding.

      2. Treat for shock.

3. Supplies

   1. Every shop shall have a first aid kit or cabinet properly marked and its location pointed out to all students.

   2. Each kit or cabinet shall be properly maintained with a full supply of compresses, bandages.

1.1.3. TRANSPORTATION

1. "Parents should be notified immediately of all cases of illness or injury occurring on school premises. If the sick or injured (pupil) is to be sent home or elsewhere, his parents are to arrange for his transportation. If they cannot be contacted immediately, the principal may take such action necessary for the best interest of the (pupil).

2. If the accident is serious and the situation cannot be

1.1.3. TRANSPORTATION (Cont'd)

controlled, the principal and/or his designee shall arrange for immediate transportation via ambulance in the event that the injured student's parents cannot be contacted immediately.

3. In specific cases where the nature of the injury is serious, do not attempt to move the student save for first aid procedures until professional medical help arrives.

1.1.4. ACCIDENT REPORTS

1. Fill out the Department of Education accident report form 411 (See 6.1.1. Appendix as soon as it becomes feasible to do so. Details become vague after a few hours have passed and may affect the accuracy of your report.

2. Prepare your report in duplicate. One will be delivered to the principal and the other shall be kept in your permanent file. Report all accidents for your protection.

3. The teacher should include additional information on the basis of how, where, what, who, when and why the accident happened in reconstructing the sequence of events on the back side of Form 411.

4. The U.S. Department of Labor has recommended the following principles which should be observed in preparing reports:

    1. Use common sense -- stick to the facts, weigh their value, reach justified conclusions.

    2. Investigate each clue -- any apparently reasonable conclusion will often be changed by exploring factors which may not appear to be important.

    3. Check for unsafe conditions and acts -- both are present in the great majority of accidents.

    4. Make recommendations -- no investigation is complete unless corrective action is suggested (and carried out).

    5. Investigate all accidents -- chance is often the sole difference between a trivial accident and a serious one. Results cannot be predicted.

1.2. THE ROLE OF SCHOOL SAFETY PROGRAMS

The school safety program assumes an important role in our environment and our dynamic society. All too often this role seems vague in our daily preference for more pressing details that consumes much of our activity plans. Some of our major educational goals, however noble and sincere in its conception, may seem far-fetched and impractical at times to the teacher. Much of this kind of response is, perhaps, due to unclear relationships between program goals, the school system and the role of the teacher.

Teaching safety is a very complex and difficult task. It involves the psychomotor, cognitive and affective domains of the learner in a situation where it is difficult to measure and monitor his progress. How does the the student learn to recognize unsafe conditions or acts? How will he do on his own after the demonstrations, safety exams and supervision? There is no "given" situation because most accidents occur with the convergence of several variables. How do you train a student to be aware of these variables?

The role of the school safety program within the framework of practical concerns is indeed overshadowed by immediate concerns within the laboratory. The effectiveness of the school safety program is solely dependent on the teacher and his commitment to the concept of safety. The key element in any program is the teacher who must operate within a massive framework of variables. The other elements which influence the school safety program within one environment are the community, school system, principals, teachers and students. Each element affects the school safety program positively in varying degrees:

COMMUNITY

-expectations
-resources

SCHOOL SYSTEM

-policy decisions
-facility
-staff
-resources

STUDENT

-accepts responsibility
-cooperation

PRINCIPAL

-school application
-support

TEACHER

-implement program
-coordinator
-responsible agent

1.2. THE ROLE OF SCHOOL SAFETY PROGRAMS (Cont'd)

THE ROLE OF SCHOOL SAFETY PROGRAMS

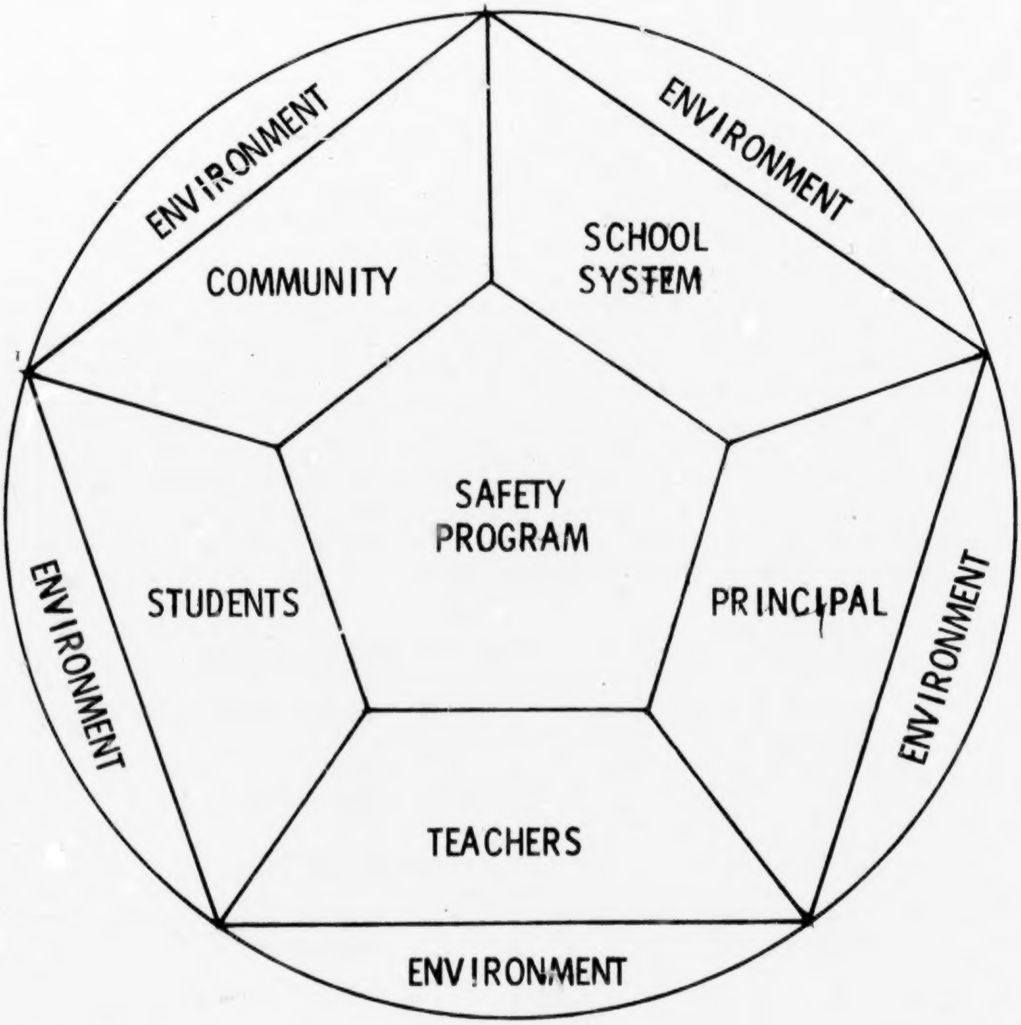

ENVIRONMENT
ENVIRONMENT
COMMUNITY
SCHOOL SYSTEM
SAFETY PROGRAM
STUDENTS
PRINCIPAL
ENVIRONMENT
ENVIRONMENT
TEACHERS
ENVIRONMENT

Fig. 1.2.

1.3. SUPERVISING FOR SAFETY

While there is no die-cast approach to this important aspect of the safety program, the teacher must recognize some of the major factors which can cause an accident. Three major factors which must be considered in the planning and implementation of safety programs are:

- PERSONNEL
- FACILITY & EQUIPMENT + UNSAFE ACT OR CONDITION = ACCIDENT
- MATERIALS

Any one of these factors or combinations thereof may result in an accident. These are discussed further in section 1.6.1. At this point it may seem quite logical to review your relationship as a supervisor with the above factors. What are you consciously doing to keep these factors in check?

The teacher, as a supervisor, shall be present at all times to manage the activities in the shop or classroom. If an emergency arises and the teacher must leave his class, another qualified teacher must be left in charge for the duration of his absence. If another teacher without proper qualifications is left in charge, all shop activities shall cease without exceptions. Leaving the students in the shop without proper supervision is not a reasonable nor prudent course of action for the teacher to take in providing for the safety of his students. Do not make allowances for students to come in and work without supervision during your preparation period or any other time when you are not in the immediate area.

Successful teachers are usually aware of common factors and the variability among their students and carefully adjust and implement their safety programs on a continuing basis. Developing unique perceptions about safety and his role as a supervisor does require continuing tact, psychology, expert teaching, diplomacy, discipline and above all else, the teacher must set the example for his students.

Makeshift programs result from poor planning and the lack of interest and understanding of the concept of safety on the part of the teacher. Without basic plans and objectives, all good intentions about establishing a safety program may deteriorate into a mere formality. The following guidelines have been recommended for supervisory personnel in establishing the basic principles of job supervision by the U.S. Department of Labor:

1.3.1 PLANNING

The supervisor must anticipate potential hazards and take preventive measures. He should welcome suggestions from both management and employees. He must plan for safety the same as for any other part of his job.

1.3.2. JOB INSTRUCTION

Job safety instruction is one of the most important parts of supervision. Personal, point-by-point demonstrations of the operations of machinery and tools are insurance that money cannot buy.

1.3.3. MORALE

Good morale and proper attitudes on the part of employees support every safety effort, even if the supervisor is busy with other matters.

1.3.4. PRODUCTION

Organizing the work makes it easier. Safety is a big responsibility and much of it can be broken down into manageable parts. For example:

Efficiency: An efficient operation gets the most production at the lowest cost. A safe operation is an efficient operation.

Good housekeeping: The supervisor must enlist the cooperation of all employees (students) to maintain safe, good housekeeping.

1.4. FACTORS AND RESPONSIBILITIES

The previous guidelines (Sections 1.3.1. to 1.4.3.) can be applied to factors such as the personnel, facility and the equipment on the school level in terms of the following responsibilities.

1.4.1. PERSONNEL

- comply with policies and regulations.
- establish emergency procedures and contacts.
- proper supervision on the job.
- maintaining safety program.
- accident investigation and reporting
- proper attitudes and good morale.

1.4.2. FACILITY

- proper planning.
- regular inspections.
- maintaining clean, organized facility.
- fire safety requirements and procedures.
- electrical code requirements (National Electrical Code and applicable local regulations).
- use of accepted industry standards.
- correction of unsafe conditions.

1.4.3. EQUIPMENT

- regular inspections and maintainance.
- electrical code compliance.
- spaced for safe operation.

1.4.4. PLEDGE AND PERMISSION CARDS

Although pledge cards are not legally binding, they are helpful in securing a moral obligation from students to consciously participate in the safety programs. Permission cards signed by a parent or guardian is a form of consent or acknowledgement that their son/daughter is engaged in industrial-type of activities in school. The final responsibility for the student's safety is held by the teacher.

1.5. LIABILITY

It is quite obvious that the Industrial Education teacher assumes a higher accident ratio per student than the conventional classroom teacher, but perhaps, what is not so obvious is that the situation requires the teacher to develop unique perceptions in the performance of his special duties. These perceptions used in a supervisory capacity may be brought to a test in court as a result of an accident. How does a teacher distinguish between a safe or an unsafe act? Teachers may be held liable for accidents which may have resulted because he was unable to spot an unsafe act or condition under his supervision.

As a responsible agent of the school, the classroom teacher shall take all reasonable precautions to insure the safety and welfare of his pupils. In the following briefing the teacher should be able to relate 1) personnel, 2) facilities, and 3) equipment.

1.5.1. EXTENT OF LIABILITY

Once the teacher has been disqualified as a reasonable and prudent individual there are other liabilities which must be assumed that may be included aside from the actual physical damage:

> When a teacher's negligent conduct has resulted in injury to a pupil so as to create a right of action, his liability may have the same far-reaching consequences as a private negligent individual would have. Not only would the teacher be liable in damages for the actual physical harm he caused, he may also be liable:
>
> 1. for physical harm resulting from fright or shock or other similar of immediate emotional disturbances caused by the injury or the negligent conduct causing it
>
> 2. for additional bodily harm resulting from acts done by third persons in rendering aid irrespective of whether such acts are done in a proper or a negligent manner
>
> 3. for any disease which is contracted because of lowered vitality resulting from the injury caused by his negligent conduct
>
> 4. for harm sustained in a subsequent accident which would not have occurred had the pupil's bodily efficiency not been impaired by the original negligence.
>
> Furthermore, the teacher may be liable for injuries resulting from his conduct where the prior physical condition of the pupil is unknown.

1.5.2. NEGLIGENCE

Formal court action may be brought against a teacher as a result of accidents when:

- there is a breach of this duty.
- there is a reasonably close causal connection between the conduct and the resulting harm.
- there is a lack of fault on the part of the pupil.
- the pupil suffers actual loss or damages.

There are three basic factors which will be considered accordingly:

- the nature of the conduct.
- the legal cause of the injury.
- the forseeability of the harm.

It takes special effort on the part of the teacher to become aware of causal relationships in the learning situation. If it can be proven that a reasonable and prudent person could have forseen the harmful consequences of a given situation, then the teacher in parallel, shall assume all liability. The following statement should provide a reference for the teacher as to the definition of negligent conduct:

> In general, negligent conduct may be of two types:
> (a) an act which a reasonable man would have realized involved an unreasonable risk of injury to others, and
> (b) failure to do an act which is necessary to protect or assist another and which one is under a duty to do.
> An act of negligence may be one which involves unreasonable risk of harm to others, even though it is done with reasonable care, skill, preparation, and warning. The negligence is inherent in the act. In other types of conduct the act may become negligent through the lack of care, skill, preparation, or warning, although the act in itself would not have constituted negligent conduct had reasonable care, skill, preparation, or warning been used.
> It is negligence to use an instrumentality, whether human being or thing, which a person knows or should know to be so incompetent, inappropriate, or defective that its use involved an unreasonable risk of harm to others. It is also negligent to permit a third person, for instance a pupil, to use a thing or to engage in an activity which is under the control of the teacher if the teacher knows or should know that the pupil intends to use or is likely to use the thing or to conduct himself in the activity in such a way as to create an unreasonable risk of harm to himself and to others. In view of the special relation that exists between teacher and pupils, the teacher is under a duty to control the conduct of pupils so as to prevent so far as possible any pupil causing bodily harm to himself and to others.

1.6. PREVENTION

The teacher shall assume a matured position of responsibility in providing for the personal safety of each student in his classroom or laboratory per the DOE Code Policies & Regulations 4210, adopted 10/70. (See 6.1.5. Appendix.)

In compliance with this policy the teacher shall provide a continuous safety program as related to his respective subject area and shall take the following reasonable and prudent actions.

- Reports knowledge of hazardous conditions and defects relating to the shop, the machinery and equipment, to the proper school authorities.
- Regularly inspects machinery, equipment, and environmental factors for safety.
- Posts in his shop conspicious notices of regulations, possible hazards, safeguards, and precautions.
- Makes certain that appropriate safety devices and guards are available and used by students.
- Makes sure students know and understand pertinent safe practices relating to the activities in which they are engaged.
- Requires students to wear appropriate personal protective equipment, such as goggles, aprons, helmets, and gloves, during hazardous activities.
- Adequately instructs and demonstrates the use of power tools or other hazardous equipment before initially permitting such use by a pupil; permits initial use only under direct supervision of the teacher.
- Shuts off power tools and lock main switch if he must leave the shop.
- Exercises continuous supervision to see that shop safety practices are observed.
- Makes himself a model for pupils to follow by personally obeying all safety rules and practices.

1.6.1. ACCIDENT FACTORS

There are five basic factors which may act singly or in combinations thereof in causing accidents. In brief, they can be identified as follows:

Teacher: Improper job supervision or instruction and overall plant management.

1.6.1. ACCIDENT FACTORS (Cont'd)

Student: Committing unsafe acts endangering self and/or others.

Facility: Poor health conditions affecting sight, hearing, temperature, respiration and overall poorly maintained and arranged.

Equipment: Unsafe for use: defective parts, lacking proper guards and adjustment.

Materials: Too small or too large for specific machine/tool, or working materials with wrong tools.

Of the factors listed, statistics have indicated that three out of every four accidents have been caused by personnel committing unsafe acts. According to the National Safety Council, an unsafe act can be defined as "A violation of a commonly accepted safe procedure."

ACCIDENT FACTORS

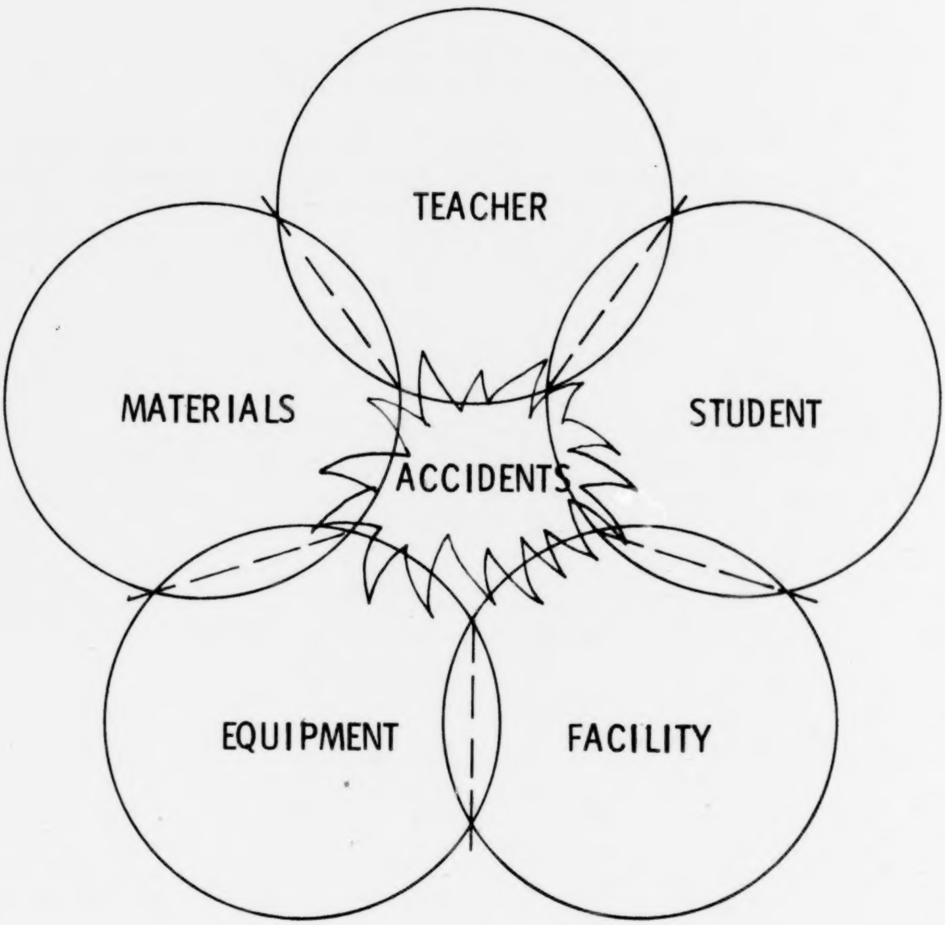

TEACHER
MATERIALS
STUDENT
ACCIDENTS
EQUIPMENT
FACILITY

Fig. 1.6.1.

1.7. STANDARDS

1.7.1. GENERAL

Standards are useful in the laboratory in that they provide a common basis on which to determine the relative safety of devices and facilities according to recommendations of concerned agencies.

1.7.2. DEFINITION

All teachers should be able to distinguish between laws, codes, and standards. The following definition was provided by the U.S. Department of Labor:

> Laws, codes, regulations, statutes, ordinances, and rules affect construction accident prevention. Statutes and ordinances are laws enacted by a legislative body. Codes and rules are groups of regulations having the force and effect of law, usually promulgated by a governmental agency as authorized by the legislature. Standards are gauges established as a result of common usage, custom, or general consent as being proper or adequate for a given purpose, but which do not have the force of law.

1.7.3. SOURCES OF STANDARDS

Information regarding standards can be obtained with a school letterhead request from the following organizations:

American Standards Association
10 East 40th Street
New York, N.Y. 10016

Associated General Contractors
1957 E Street, N.W.
Washington, D.C. 20006

National Safety Council
425 North Michigan Avenue
Chicago, Ill. 60611

Industrial Hygiene Foundation
440 Fifth Avenue
Pittsburgh, Pa. 16213

National Construct[illegible]s Association
1012 14th Street, N.W.
Washington, D.C. 20005

National Fire Protection Association
60 Batterymarch Street
Boston, Mass. 02110

American Insurance Association
85 John Street
New York, N.Y. 10038

Underwriters' Laboratories
207 East Ohio Street
Chicago, Ill. 60611

American Mutual Insurance Alliance
919 North Michigan Avenue
Chicago, Ill. 60611

American Society for Testing Materials
1916 Race Street
Philadelphia, Pa. 19103

National Bureau of Standards
Washington, D.C. 20234

1.8. CHARACTERISTICS OF A SAFETY PROGRAM

There are several characteristics which every safety program should have in varying degrees in providing for the personal safety of each student while on campus and as a member of the community. These can be described as:

1.8.1. ORGANIZATION

Every safety program requires organization in order to be implemented with some degree of success. (See sample 10-point program in this section.) A periodic review is necessary to insure implementation of the total program.

1.8.2. DISCIPLINE

The teacher should insist on safety in the laboratory from the very first day of activities. Reasonable and prudent actions should prevail in the interest of the safety and welfare of the students. No individual action should be allowed to infringe on the safety of others.

1.8.3. PRACTICAL

Use common sense. There is no "cookbook" approach to installing and maintaining a good safety program. Every teacher must adjust to the situation within his laboratory.

1.8.4. INVOLVEMENT AND INTEREST

Active involvement and enthusiasm are essential to the survival of any program. Without these characteristics, a safety program may deteriorate and become a mere legality. The teacher should encourage student participation and welcome suggestions.

1.8.5. RELEVANT INFORMATION

A constant effort should be made to seek out and update audio-visual aids as an integral part of the program. Out-dated and irrelevant information is an indicator to the students about the teacher's interest and involvement.

1.8.6. PERFORMANCE

Accident-free activities for the benefit of all.

1.9. THE SCHOOL SAFETY PROGRAM

School shops and laboratories provide an environment for the development of safety concepts and safe habits that will help guide the actions of the individual in all life situations. Some of the benefits derived from a "sound safety program" are immediate, and some are long range. Before embarking on a safety program for students, the teacher must first check to see that the physical plant and equipment is satisfactory to be conducive to an effective safety program. The following is a sample program.

SAFETY PRACTICES FOR TEACHERS

1.9.1. SAFETY INSPECTIONS

1. Conduct periodic safety inspections.
2. Use shop safety inspection check list. See 6.2.3. Appendix.

1.9.2. ACCIDENT REPORTS

1. Make a report of all shop accidents resulting in injuries to students to the school administration, regardless of nature or severity.
2. Use printed Form 411 issued by department, 6.2.1. Appendix.
3. Keep a permanent record of all shop accidents resulting in injuries to students.

1.9.3. INSTRUCTIONAL TECHNIQUES

1. Develop safe work habits in students through teacher example.
2. Teach accident prevention with a positive approach.
3. Provide conspicuous visual aids.
4. Update information and techniques.

1.9.4. EQUIPMENT SAFETY

1. No combination machine shall be used in shop.
2. All belts and rotating gears shall be adequately guarded or barricaded.
3. Permit students to use a machine only after passing an examination on the safe operation of the machine. No age stipulation will be imposed on a student. The student's maturity and his ability to operate the machine will be the instructor's guidelines.

1.9.4. EQUIPMENT SAFETY (Cont'd)

4. Prohibit students from operating any machine when the instructor is not present. Disconnect and lock main power switch when leaving for any period of time.

5. Fasten all machines securely to the floor or work benches.

6. Accept personal responsibility for all students using machine or hand tools in the shop.

7. Use standardized color coding on all hazardous machines to emphasize danger areas. See Facilities Section for color requirements.

1.9.5. HOUSEKEEPING PRACTICES

1. Provide for daily removal of all sawdust, shavings, metal cuttings, and other waste materials.

2. Provide safety zones in maintaining required aisle space and working space around machines.

3. Provide for cleanup of the shop equipment and floors at the end of each period depending upon the rate of scrap accumulation or as required.

1.9.6. ELECTRICAL SAFETY

1. Make all equipment switches easily accessible to the operator.

2. Provide a ground on all motors, switch boxes, and other electrical equipment.

3. Teach students that all electrical apparatus is "hot" and must be utilized with precaution.

1.9.7. FIRE SAFETY

1. See that fire extinguishers are provided in the shop area and that they are regularly inspected and tested. See 6.3.1. and 6.3.1.1. Appendices for classification of fires and types of extinguishers to be used.

2. Store flammable liquids in approved safety containers, and that these materials shall in no case be used near an open flame.

3. Provide metal-covered container for grease and paint rags.

4. Provide instruction and practice in the proper procedure for evacuating the shop in case of fire or other emergencies.

1.9.7. FIRE SAFETY (Cont'd)

5. All students shall be familiar with fire exits and exit procedures.

1.9.8. FIRST AID PRACTICES

1. Provide a first aid kit in the shop easily accessible to all, and properly maintained and marked.
2. Provide only emergency first aid treatment for serious injuries and then refer to qualified medical personnel for treatment. Do not prescribe or administer any medication.
3. Enroll in and successfully complete American Red Cross first aid course.

1.9.9. PERSONAL PROTECTION

1. Prohibit running in shop at any time.
2. Prohibit horseplay or practical jokes of any kind within the shop area.
3. Required wearing of proper eye protection when there is a danger of flying particles or chips. See C.1.8. Appendix.
4. Provide proper respirators for student use when harmful dusts or fumes exist.
5. Require students to observe rules in regard to proper clothing and protective devices when operating hazardous equipment.
6. Prohibit students from wearing rings and other jewelry when operating hazardous equipment. Long hairstyles shall be properly secured.
7. Require students to wear shoes at all times in the shop.

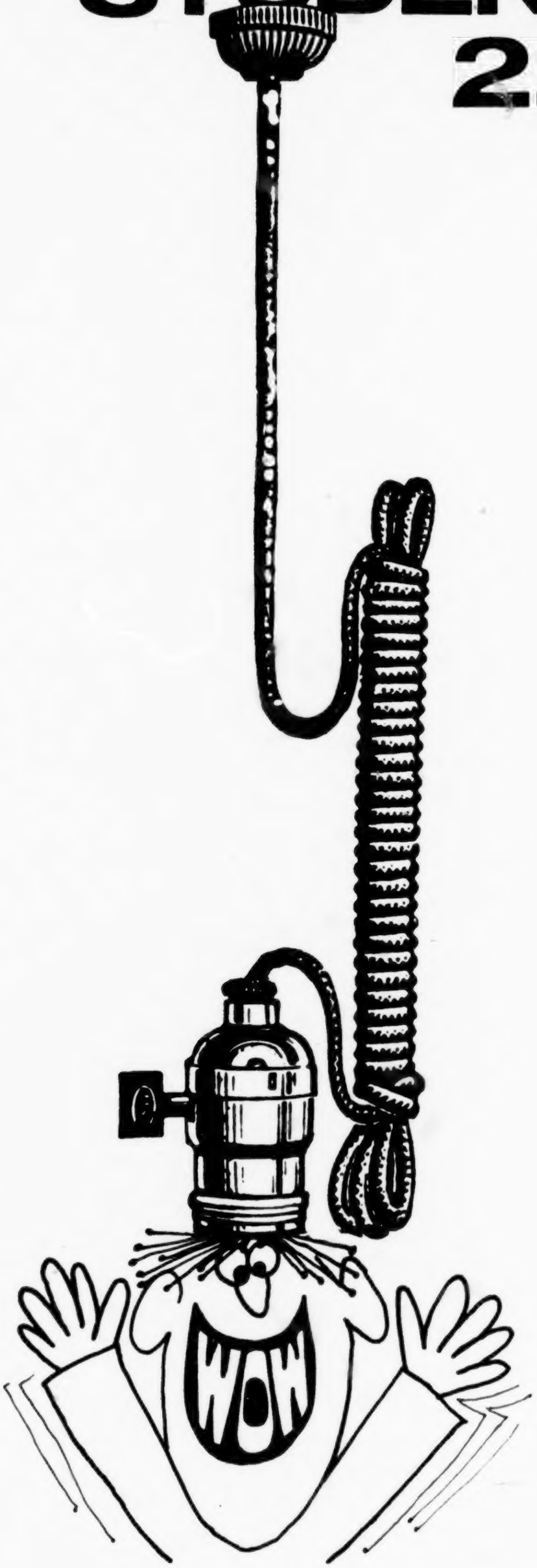
1.9.10. GENERAL PRACTICES

1. Provide for cross-ventilation of air in the shop.
2. Take precautions to keep any source of poisonous or combustible fumes outside the shop.
3. Carry liability insurance as a protection against possible negligence charges.
4. Encourage all students to carry accident insurance.

1.9.10. GENERAL PRACTICES (Cont'd)

5. Require students to sign an acknowledgement of safety instruction or examination taken.
6. Pledge cards are helpful in securing moral obligation from students.
7. Consistently enforce all rules and regulations in the shop. Fairness and trust have much value in any safety program.

STUDENT
2.0



STUDENT

2.0. THE STUDENT

Sections 2.0 through 6.0 of this guide should be readily accessible to all students as active participants in the school safety program. Teachers should encourage suggestions and contributions to this guide as an on-going activity to keep abreast of changing trends within the school.

2.1. A MESSAGE TO STUDENTS

You should learn about the procedures, tools and machines to use them with confidence instead of being scared or being a show-off fool. Don't fake it...learn it! Horseplay in the shop is for da kine guys who nevah grow up and with friends like dat, who need enemies?

We talk a lot about COMMON SENSE and why the other guy doesn't use it, but in the school shop the whole safety program depends on it and that means everyone in the course...no exceptions. It does require involvement by you...the individual student. Do your thing for safety because your fellow students are depending on you.

2.1.1. STUDENT RESPONSIBILITY

As a student in Industrial Education you have a responsibility not only to yourself but to the group for safety within the classroom and the shop areas. Selfish attitudes such as "each man for himself" should not be part of the school shop scene. Teamwork is required for the safety of all members who participate. Don't wait for the next guy to correct an unsafe condition...just DO IT or call it to the attention of your teacher. The following outline is YOUR responsibility to your team:

1. FOLLOW INSTRUCTIONS:

   -observe safety rules.
   -no horseplay.
   -operate machinery only when authorized to do so.
   -keep machine guards in place.
   -follow approved procedures.

2. KEEP WORK AREAS CLEAR:

   -keep floors and benches clean.
   -replace tools properly.
   -wipe up spills.
   -aisles clear.

3. DRESS PROPERLY:

   -no loose clothing.
   -no jewelry.
   -secure long hair.
   -wear shoes.
   -use proper protective gear.

4. REPORT UNSAFE CONDITIONS:

   -missing guards.
   -defective machinery or tools.
   -frayed electrical cords or defective switches.
   -dull tools or machinery.
   -stop unsafe act by fellow student.

2.2. SAFETY PRACTICES FOR ALL AREAS

Safety rules vary from one school system to another. However, most school shops have definite rules and regulations to follow and the teacher has the responsibility to enforce them. A successful safety program results from an understanding by the students of the reasons and the advantages for each rule.

2.2.1. GENERAL SAFETY RULES

1. Have teacher approve all work that you plan to do.
    1. Assure the best, easiest, and safest way to do the job successfully.
    2. Protect all class members from accidents caused by careless or incompetent use of tools and machines.
2. Report all injuries, even though slight, to the teacher immediately.
    1. Teacher will determine if treatment is required for the injury. Immediate attention may be given by the teacher.
    2. First aid treatment helps prevent minor cuts, abrasions, bruises, or burns from becoming infected.
    3. Assist teacher in correcting situations to prevent further injuries.
3. Observe rules concerning operator's safety zones.
    1. Prevent crowding and bumping the operator.
    2. Give student operator complete responsibility in the use of the machine.
    3. Protect all class members from injuries caused by moving machine parts and flying pieces of material.
4. Cooperate with your classmates in the student management of shop.
    1. Make sharing in the responsibilities of shop management a satisfying experience.
    2. A greater amount of time for productive shop work will result from efficient handling of tools and materials.
    3. Equal distribution of tasks is necessary in maintaining a desirable place to work.

2.2.1. GENERAL SAFETY RULES (Cont'd)

5. Obtain permission from instructor before using any power machine.
    a. Make sure that the machine selected will provide the best, easiest and safest method for doing the job.
    b. Allow instructor opportunity to check the condition of the machine.
    c. Provide instructor opportunity to make certain that all class members are protected from accidents caused by careless or improper use of equipment.

2.2.2. SAFETY RULES FOR ALL STUDENTS

General

1. Ask your teacher to approve all work you plan to do.
2. Report all injuries to your teacher immediately.
3. Wear suitable eye protection when engaged in any activity where eye hazards may exist.
4. Wear appropriate clothing for shop work. Remove or fasten any loose clothing or necktie. Roll sleeves above elbows.
5. Long hair should be confined to prevent becoming entangled in any moving part of a machine.
6. Wear shoes in the shop at all times to prevent foot injuries.
7. Observe rules concerning operators' safety zones.
8. Cooperate with your classmates in the management of your shop.
9. Caution any student you see violating any safety rule.
10. Horseplaying, running, and the throwing of objects in the shop are forbidden.
11. Report to the teacher any equipment or tool that does not seem to work properly. Do not force tools under any condition.
12. Keep tools and materials from projecting over the edge of benches whenever possible.
13. Use a brush or a piece of wood to clear away dry chips.

2.2.2. SAFETY RULES FOR ALL STUDENTS (Cont'd)

14. Keep floor clear of scraps and litter.

15. Wipe up immediately any liquids spilled on floor. Use a rag to clean oily areas.

16. Keep bench and cabinet drawers and locker doors closed.

17. Place oily rags and other combustible materials in a covered metal container.

18. Exercise care in handling large, heavy, or long material. Know proper method to lift any object.

19. Practice procedure to follow in case of a fire or other disasters.

20. Be sure hands and floor area are completely dry before handling any electrical equipment or receptacles.

2.2.3. HAND TOOLS

1. Do not use tools with oily, greasy, or wet hands.

2. Select the proper size and type of hand tools for the particular job.

3. Keep all cutting blades sharp and in good condition and provide safe storage for them when not in use.

4. Handle edged or pointed tools with care. Pass tools to classmates with the handles first.

5. When using sharp-edged tool, point edge away from yourself and your classmates.

6. Clamp small work on bench or secure in vise when using gouge, wood chisel, or screw driver.

7. Control chisels, gouges, or carving tools with one hand while the other hand supplies the power.

8. Wear face shield or safety glasses when chipping or cutting with a cold chisel. Arrange your work so that classmates are protected from flying chips.

2.2.4. MACHINE TOOLS

1. Do not operate any machine tool with oily, greasy or wet hands.

2. Qualify as a safe machine operator.

2.2.4. MACHINE TOOLS (Cont'd)

3. Operate only those machines for which you have received instruction and permission to operate.

4. Check adjustments on machines before turning on the power.

   Rotate machine one revolution by hand whenever possible without danger.

5. Keep all safety guards in place.

6. Make sure all other students are outside the operator's safety zone before turning on the power. Safety zone shall be dry and clean.

7. Start your own machine and remain with it until it comes to a complete stop.

8. Notify teacher, superintendent, or safety foreman when a machine is not working properly.

9. Stay clear of machines being operated by others. Do not lean on machines.

10. Wait for machine to come to a complete stop before oiling or cleaning. Turn off power switch and remove plug from outlet before making major adjustments or changes on machines.

2.3. GENERAL SAFETY RULES EXAM

Directions: Each item has four possible answers. Only one answer is correct. Place the letter of the correct answer in the parentheses to the left.

( ) 1. Report all injuries, even though slight, to: (A) an advanced student; (B) your conselor; (C) your teacher; (D) the principal.

( ) 2. Wear suitable eye protection: (A) to improve your vision; (B) to avoid myopia; (C) to improve your appearance; (D) when engaged in any activity where eye hazards may exist.

( ) 3. Fasten or remove loose clothing and rool sleeves above your elbows: (A) before operating any machine; (B) during the operation of the machine; (C) after operating the machine; (D) only when assisting the teacher.

( ) 4. Shoes must be worn when performing any operation: (A) that may result in foot injury; (B) that requires one to be well dressed; (C) only the teacher; (D) only the student operating the equipment.

( ) 5. The operator's safety zone around a machine is to protect: (A) the equipment; (B) all the people working in the shop; (C) only the teacher; (D) only the student operating the equipment.

( ) 6. Any liquid spilled on the floor should be wiped up immediately because it: (A) looks unsightly; (B) will stain the floor; (C) causes more work during cleanup; (D) may cause someone to slip and injure himself.

( ) 7. Before using any power equipment, permission should be obtained from: (A) an advanced student; (B) your counselor; (C) your teacher; (D) the principal.

( ) 8. Any breakage or damage to a tool, instrument, or machine should be reported as soon as possible to: (A) an advanced student; (B) your teacher; (C) your friend; (D) the custodian.

( ) 9. When using a chisel, you should: (A) keep both hands back of the cutting edge; (B) strike the chisel with a hammer; (C) hold the stock with one hand while pushing the chisel; (D) point the sharp edge toward your classmate.

( ) 10. Rags containing oil, gasoline, alcohol, shellac, paint, varnish, or lacquer must be: (A) kept in a covered metal container; (B) stored in your locker; (C) folded neatly and placed on a shelf; (D) stored in a cool, dry place.

2.3. GENERAL SAFETY RULES EXAM (Cont'd)

Answers to Questions:

1. C, 2. D, 3. A, 4. A, 5. B, 6. D, 7. C, 8. B, 9. A, 10. A.

2.4. QUALIFYING ON MACHINES

All students must be qualified before using any power machines in the shop. The amount and kind of instruction varies with the teacher, but the process is basically the same for all machines. See Fig. 2.4 for qualifying on machines.

2.4.1. INITIAL ORIENTATION

This is usually a briefing about the machine and its uses. Major parts are identified and adjustments are discussed. Visual aids may be used during this orientation. Safety instruction is started at this time.

2.4.2. DEMONSTRATION

Safety instruction is continued during the demonstration phase on the machine itself. The teacher will demonstrate the use of the machine in the following cycle (see Section 2.5 for details):

a. preparation
b. actual operation
c. shut down

The question/answers should be continuous throughout the demonstration. If a point is not clear, ask the teacher to go over the point until you are satisfied...don't try to guess at it later.

2.4.3. SAFETY CHECK

All students shall pass a safety exam before using any power machinery. This exam is to check your knowledge about the machine and its safe operation. If you fail the exam, go over the questions with your teacher and review the demonstration phase. If words on the exam are confusing, perhaps you can do better by pointing out your answers on the machine to satisfy this requirement.

2.4.4. STUDENT PERFORMANCE

The student will use the machine for the first time under the direct supervision of the teacher. Be cool and concentrate on what you are doing....don't rush yourself. The teacher will guide you through the operation and will correct your procedures until he is satisfied that you can do it safely. After you have successfully completed your performance you will be qualified to use that particular machine as outlined in Section 2.5.

2.4.5. QUALIFICATION COMPLETED

After you have qualified on a machine, a note will be made on your card or file about the kind of machine that you qualified on and the date.

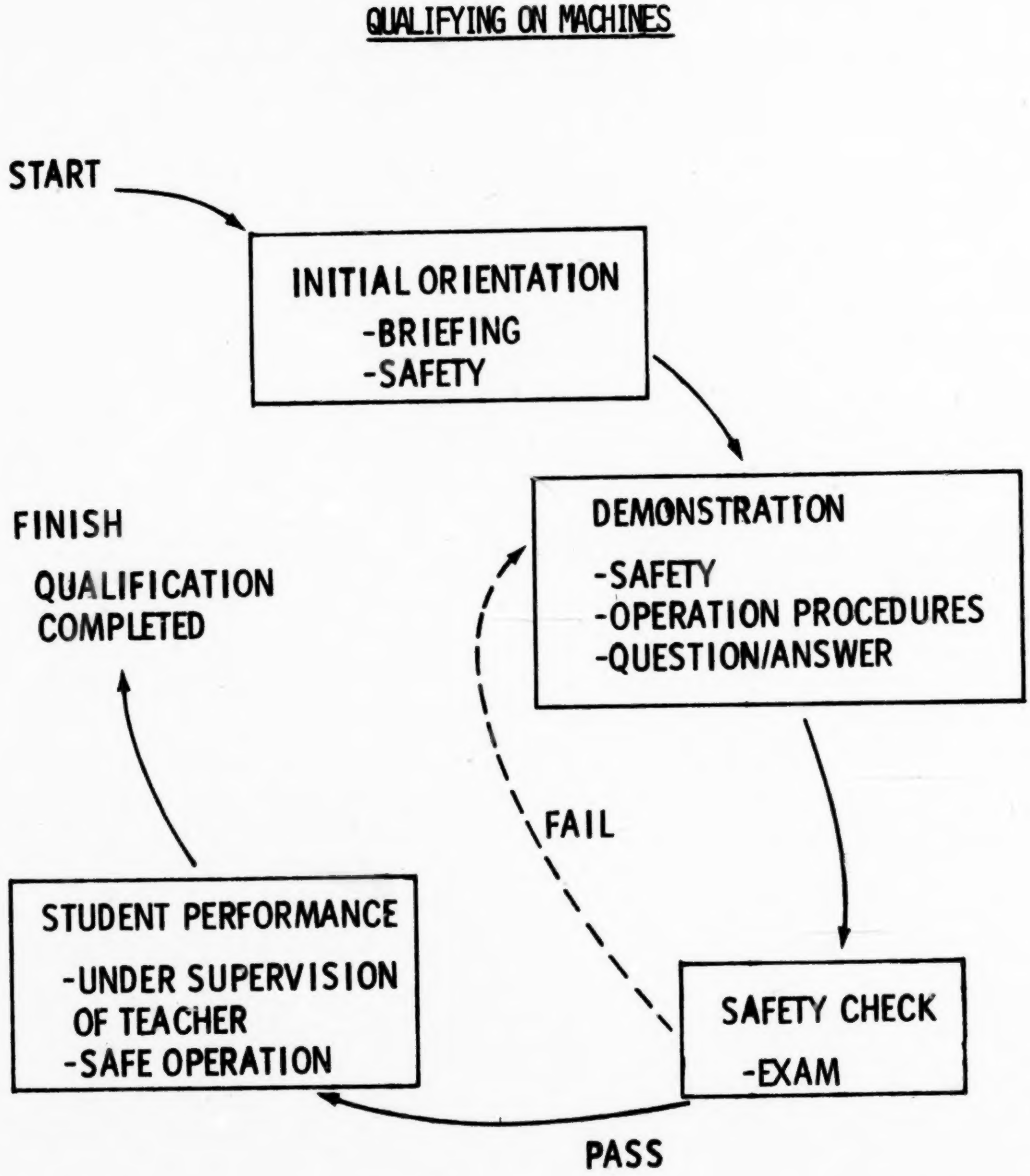

QUALIFYING ON MACHINES
START
INITIAL ORIENTATION
-BRIEFING
-SAFETY
DEMONSTRATION
-SAFETY
-OPERATION PROCEDURES
-QUESTION/ANSWER
FAIL
SAFETY CHECK
-EXAM
PASS
STUDENT PERFORMANCE
-UNDER SUPERVISION OF TEACHER
-SAFE OPERATION
FINISH
QUALIFICATION COMPLETED

Fig. 2.4.

2.5. OPERATION PROCEDURES FOR MACHINES

The following procedures shall be used by all students for operating machines....without exceptions. You must be qualified on a particular machine before you can use it. It is important to obtain permission from the teacher before using any machine because all machines can be dangerous, some machines must be operated only under his direct supervision and assistance. The teacher is responsible for all the students in the shop and your cooperation is required for an accident-free shop.

There is a basic cycle which applies to the operation of any machine. The three phases are: 1) PREPARATION, 2) OPERATION, 3) SHUT DOWN. This cycle should serve as a checklist for the student while doing his work. See Figure 2.5.

2.5.1. PREPARATION

1. always obtain permission from the teacher.
2. clear the area for work.
3. wear proper clothing, remove jewelry and secure long hair.
4. inspect machine-wiring, switches, guards, etc.
5. use proper protective gear.

2.5.2. OPERATION

1. checks and adjustments (disconnect power).
2. remove adjusting wrenches or keys.
3. guards in proper position.
4. secure work and maintain proper footing.
5. power on...CAUTION!
6. do not rush or force machine.

2.5.3. SHUT DOWN

1. power off.
2. all parts of machine stopped.
3. remove material from machine.
4. clean up (disconnect power when cleaning hazardous parts of machine).

OPERATION PROCEDURES FOR MACHINES

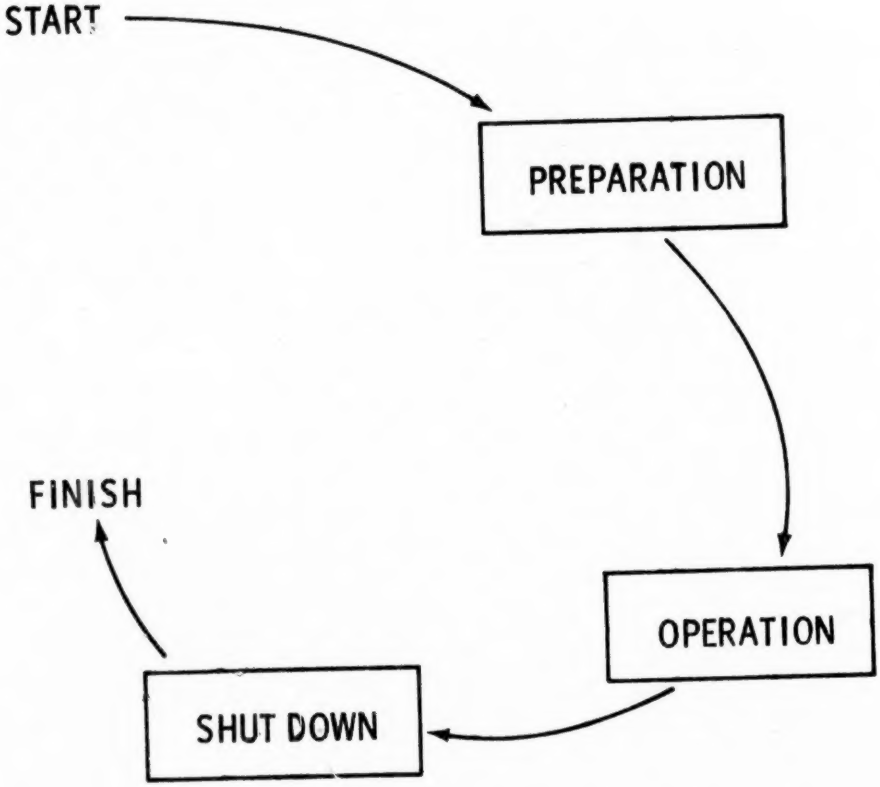

START
PREPARATION
OPERATION
SHUT DOWN
FINISH

Fig. 2.5.

2.6. PROTECTIVE GEAR

All students shall wear proper protective gear while working on any machinery in the shop for their personal safety. More than 100,000 disabling eye injuries are reported every year and there are thousands of minor injuries which are not reported but cause a great deal of discomfort. Most of the injuries could have been prevented through the use of proper protective gear.

If you have any doubts about your eyesight, a simple test at your school dispensary might indicate a need for corrective glasses. You should have your vision checked periodically to insure yourself against needless accidents due to poor vision...DON'T take a chance.

If you are supposed to wear corrective glasses, keep them on at all times while you are in the shop. These rules are for your own protection... don't be a loser.

This section on protective gear will cover the following:

2.6.1 Eye/face

2.6.2 Head

2.6.3 Hand

2.6.4 Foot

2.6.5 Respiratory

2.6.1. EYE/FACE PROTECTIVE GEAR*

1. TYPE OF JOB

Chipping, finishing or iron and steel castings and forgings, lathe work.

PROTECTION FROM

Large flying objects...rivets, nails, metal or rockchips, fragments from mushroomed tools.

TYPE OF EYE/FACE PROTECTION

Safety spectacles with impact-resistant lenses, lens containers, frames, side shields of maximum strength and comfort for wearer. Frames that are light in weight and not subject to corrosion under sterilization. Heavy-duty cup goggles with impact-resistant lenses.

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* Adapted from Occupational Safety and Health Standards, 1910.133 - 1971

2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

2. TYPE OF JOB

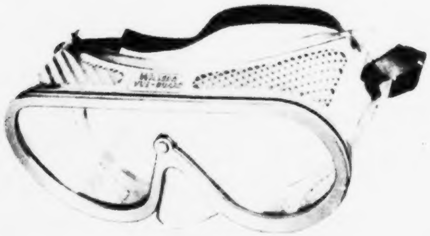
Woodwork, scaling and grinding of metal stone dressing, etc.

PROTECTION FROM

Dust and small flying particles.

TYPE OF EYE/FACE PROTECTION

Composition cup coverall goggles of moderate strength that enclose eye completely and have indirect port ventilation. Cover type of plastic one piece lens; safety spectacles with impact-resistant lenses and side shields.



2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

3. TYPE OF JOB

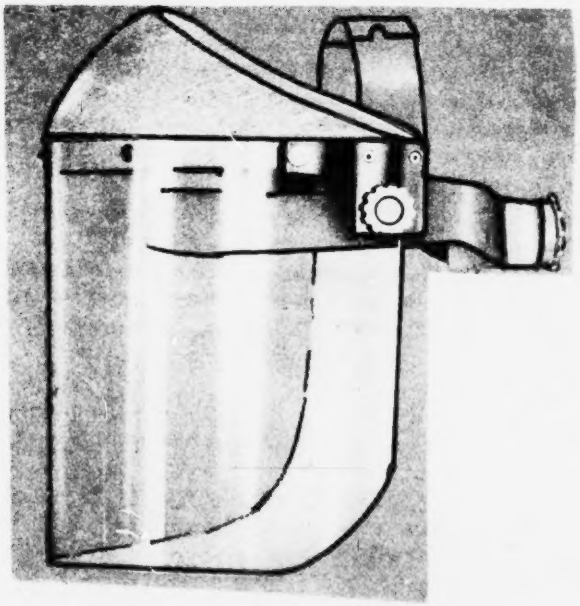
Electric spot and butt welding, where there is no exposure to radiant energy.

PROTECTION FROM

Dust, wind and metal sparks.

TYPE OF EYE/FACE PROTECTION

Safety spectacles with impact resistant lenses. Full face plastic shield of moderate strength cover type of plastic one piece lens.



2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

4. TYPE OF JOB

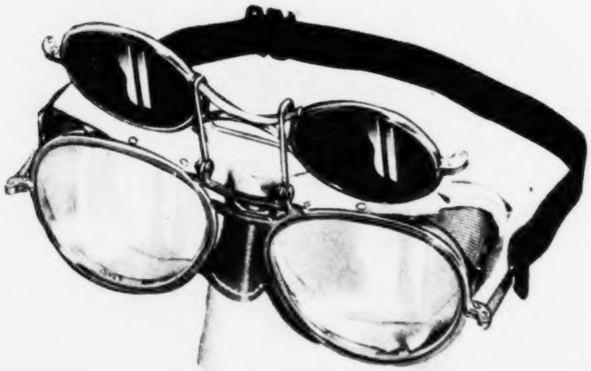
Casting, tinning, babbitting pouring lead joints. These operations are serious industrial eye hazards.

PROTECTION FROM

Splashing metal.

TYPE OF EYE/FACE PROTECTION

Cup goggles with impact resistant lenses capable of withstanding moderate blow of molten metal and with lens containers made to hold cracked lens in position--all materials nonflammable. Cover type of plastic one piece lens wire screen face shield with flare safety spectacles with side shields and impact resistant lenses.



2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

5. TYPE OF JOB

Handling of volatile and corrosive chemicals, dipping in galvanizing and pickling tanks, etc.

PROTECTION FROM

Gases, vapor and liquids entering the eyes.

TYPE OF EYE/FACE PROTECTION

Tight gas-proof goggles with impact resistant lenses. Wide flare plastic face shield. Cup goggles with impact resistant lenses. Rubber mask goggles with indirect screened ventilation ports, and wide-vision impact resistant lenses.

2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

6. TYPE OF JOB

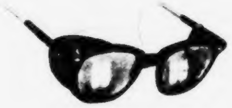
Working near or adjacent to furnaces, welding operations, etc.

PROTECTION FROM

Reflected light and glare welding flash.

TYPE OF EYE/FACE PROTECTION

Safety spectacles with filter shade lenses with or without side shields (with side shields and with use of helmet in gas shielded arc welding). Cup goggles with filter lenses, retaining and opaque side shields.



2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

7. TYPE OF JOB

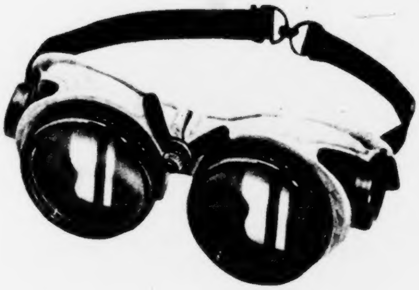
Oxyacetylene, oxyhydrogen, or resistance welding and cutting, testing of lamps involving exposure to excessive brightness.

PROTECTION FROM

Injurious radiant energy when a moderate reduction of intensity of the visible radiant energy is desired.

TYPE OF EYE/FACE PROTECTION

Cup goggles with impact resistant filter lenses and clear cover glass to save the welding lenses from pitting--with indirect, screened, ventilating ports to prevent fogging of lenses and to exclude injurious flashes, hot metal and sparks.



2.6.1. EYE/FACE PROTECTIVE GEAR (Cont'd)

8. TYPE OF JOB

Electric arc welding and cutting, irradiation with ultraviolet light, hydrogen welding.

PROTECTION FROM

Injurious radiant energy when a large reduction of the visible radiant energy is desired.

TYPE OF EYE/FACE PROTECTION

Scarfing shield with impact resistant filter lenses and clear cover glass. One piece shell welding helmet with flip front. Welding section that can be raised for quick inspection of weld, and with a stationary section fitted with clear impact resistant glass for observation of weld. Fabricated shell welding helmet with stationary filter glass section.

2.6.2. HEAD PROTECTIVE GEAR

1. TYPE OF JOB

General industrial or construction type of jobs where falling or swinging objects are a hazard.

PROTECTION FROM

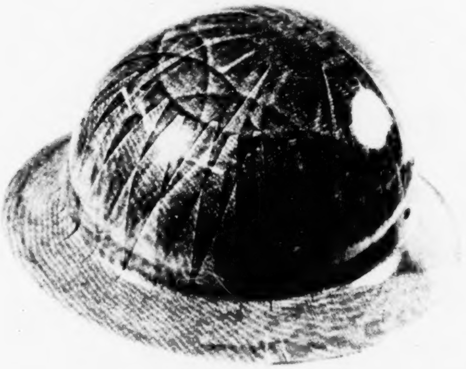
Falling or swinging objects, electrical shock in head area and act as a sunshade outdoors. Note that special dielectric headgear usually made of plastics such Polycarbonate must be worn for protection against electrical shocks.

TYPE OF HEAD PROTECTION

High impact-resistant shell of aluminum, fiberglass, phenolic, or polycarbonate. Impact must be evenly distributed and absorbed with web suspension system. Federal specifications require 1 1/4" clearance between the wearer's head and the protective shell. Adjustable and comfortable webbing with perforated headband for coolness. A nape strap should be included to keep the headgear from falling off.

POLYCARBONATE
(DIELECTRIC)

ALUMINUM



PHENOLIC

2.6.3. HAND PROTECTIVE GEAR

1. TYPE OF JOB

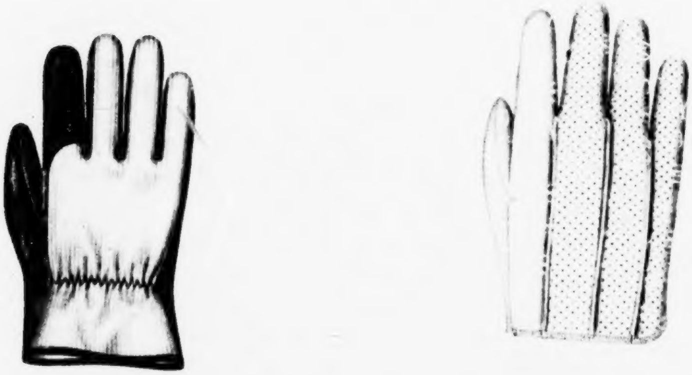
General industrial work including the handling of wood, metal, etc.

PROTECTION FROM

Cuts, splinters or blistering of hands.

TYPE OF HAND PROTECTION

There is a variety of gloves to suit various conditions. Vinyl impregnated gloves provide a non-slip grip surface and excellent dexterity. Vinyl, rubber coated gloves also provide a non-slip surface but are usually too bulky for fabricating or assembling small parts. Flannel and leather gloves are also widely used for general industrial work. However leather gloves cannot be laundered.



VINYL-IMPREGNATED

LEATHER

FLANNEL

2.6.3. HAND PROTECTIVE GEAR (Cont'd)

2. TYPE OF JOB

Working with or handling acids, caustics, alcohol, solvents, oil and grease.

PROTECTION FROM

Chemical burns or skin irritation.

TYPE OF HAND PROTECTION

Neoprene gloves of various weights are widely used in this category. Lightweight neoprene gloves are used in food processing while heavy-duty types offer better protection for industrial work. Some types of vinyl or rubber coated gloves are also used for protection against chemicals.

LIGHTWEIGHT
NEOPRENE

HEAVY-DUTY
NEOPRENE

VINYL-COATED

RUBBER-COATED

2.6.3. HAND PROTECTIVE GEAR (Cont'd)

3. TYPE OF WORK
Grinding or sanding.

PROTECTION FROM
Abrasions.

TYPE OF HAND PROTECTION
Heavy-duty polyvinylchloride (PVC) or neoprene gloves. Liquid-proof types of gloves offer protection against chemical burns.

NEOPRENE

POLYVINYLCHLORIDE (PVC)

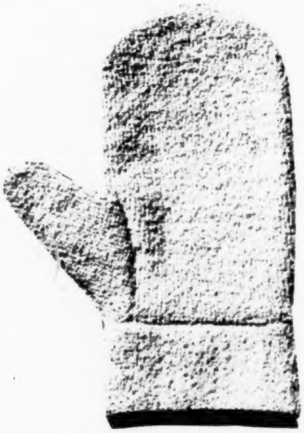
2.6.3. HAND PROTECTIVE GEAR (Cont'd)

4. TYPE OF WORK
Foundry, forging, using kilns or ovens.

PROTECTION FROM
Heat.

TYPE OF PROTECTION
Asbestos impregnated, heavy cotton knits or neoprene gloves. Some types of double-insulated neoprene gloves provide protection against cold also. Mitts, pads and sleeves are convenient for brief handling of hot objects.

INSULATED NEOPRENE



MITT

PAD

HAND PAD

2.6.4. FOOT PROTECTIVE GEAR

1. TYPE OF JOB

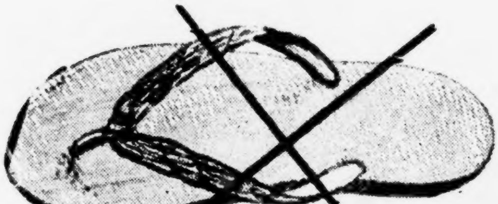
Students shall wear shoes in the shop area at all times without exception. Cuts and punctures are common hazards which could be prevented by wearing proper footwear. "Zoris" and other types of slippers or sandals are not acceptable footwear for the shop. Any student who prefers to wear slippers to school should leave an old pair of shoes in his locker for shop use.

PROTECTION FROM

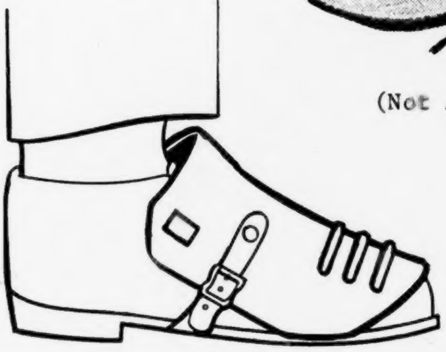
Heavy or sharp falling objects which might injure the top side of the foot. Punctures, splinters and cuts on the sole of the foot. Note that cleats shall not be worn on the soles of shoes. On smooth or wet surfaces shoes with cleats and other sole-saving devices could be hazardous.

TYPE OF FOOT PROTECTION

Shoes shall have leather or rubber type of sole with full leather or fabric cover for the entire foot up to the ankles. Canvas deck shoes or basketball shoes offer very little protection for the foot and should be limited to light work in the shop. Steel toe boots offer the maximum protection for the foot for most shop activities. Check with your teacher to be sure that you have the proper footwear for the job.



ZORI
(Not Acceptable)



STEEL COVER

STEEL TOE

2.6.5. RESPIRATORY PROTECTION

1. TYPE OF JOB

Spraying, sanding, cutting, grinding or any type of job where fumes, dust or other types of intoxicants are a hazard to your respiratory system.

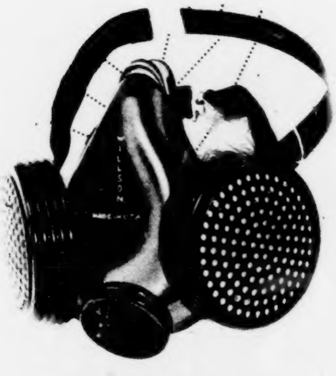
PROTECTION FROM

Damage to your respiratory system caused by dust, harmful fumes or vapors. There are some immature people who like to sniff or inhale intoxicating fumes just for kicks and permanently damage vital organs in breathing system. Wear the proper type of mask or respirator for the job.

TYPE OF PROTECTION

Synthetic rubber mask with adjustable headband and dual filter receptacles. Filters on better models can be changed for protection against various hazards such as dust, fumes, gases or paint sprays. Some simple types of masks are washable while some types of paper-fabric masks are disposable after several uses.

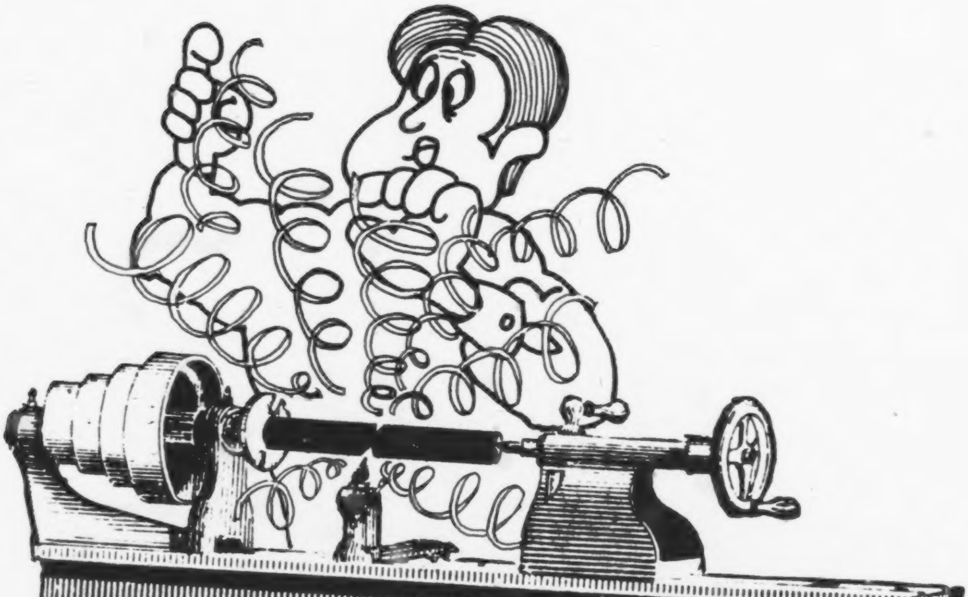
FABRIC
(DUST PROTECTION)



DUAL-CARTRIDGE
(MULTI-PURPOSE)

ACTIVATED CHARCOAL
(PAINT SPRAY)

FACILITY
3.0



3.0. THE FACILITY

Although it is difficult to measure the effects of sound, light, temperature and color variations on students within the shop, the accepted industry standards as they are derived from long-range experimentation and experience must be relied upon. There is no denying that a bright, clean and organized facility is in fact a safe place to work in and quite obviously has a profound effect on the morale of students.

The National Standard School Shop Safety Inspection Check List provided in Appendix Section should be used to assess the condition of the shop at the beginning of every school term or semester and reviewed in between for follow-up action. If an unsafe condition cannot be corrected by the teacher, a formal report should be submitted with recommendations to the school principal for action. Include pictures whenever possible to draw immediate attention to the situation at hand.

Safety inspections, however, are not the only course of action for the teacher to follow in providing for a safe facility for his students. Long-range plans must be made for improvements which cannot be covered in the school budget. Without a definite plan, only minor improvements can be brought about. Even minor improvements require some forethought and planning with limited resources. See 6.2.2. Appendix for planning worksheet.

3.1. SAFETY INSPECTIONS

There are two types of safety inspections which are vital to the safety of personnel within the shop. Daily inspections should be conducted in addition to the preventive maintenance inspection checklist which is included in this section as the National Standard School Shop Safety Inspection Check List (6.2.3. Appendix). Safety inspections provide the teacher with a systematic approach in detecting, analyzing and correcting unsafe conditions. The teacher should be well aware of the fact that failure to correct unsafe work methods and conditions could very well be considered as negligence on the part of the teacher. Conditions change constantly in the shop and the teacher should be able to adjust and perceive an unsafe condition under these circumstances.

3.1.1. DAILY INSPECTIONS

This type of inspection is usually carried on throughout the activity period by the teacher with the help of his students who should receive this type of training as a part of the safety program. If an unsafe work method or condition is detected all related activity should cease at once. Makeshift or temporary corrections are not acceptable under any circumstances. If the temporary correction fails, the same unsafe condition will exist and before it can be detected again, a student might be injured.

Check for the following hazards during your daily inspections:

1. Protective gear: Students should be dressed properly for the job at hand. Protective gear should be conveniently located for use.

2. Building conditions: Aisles, driveways and fire exits should be kept clear at all times. Floors should be free from spills and wastes.

3. Shop layout: The general plan of the shop should not produce congestion or "bottlenecks" during the work period. Working in crowded quarters is hazardous.

4. Housekeeping: Correct leaks, spills and unsafe waste disposal methods immediately. Brooms, brushes and waste containers should be conveniently located for use.

5. Storage: Tools and materials properly stored to facilitate usage. Neatly stored materials help prevent unnecessary rummaging through racks. Combustible materials or liquids should be stored to prevent ignition.

6. Equipment maintenance and guards: Check around points of operation for worn parts or improper adjustments and grounding. Guards and guides should work smoothly without binding.

3.1.1. DAILY INSPECTIONS (Cont'd)

7. Ventilation: Check mechanical ventilation system as well as natural ventilation. Dust or fumes should be treated as a major hazard in the shop See section 2.6.5 for protective gear.

8. Electrical: Check for glare and shadow-free lighting conditions. Equipment wiring, switches, motors and grounding should be checked frequently. Use compressed air for cleaning out motors and switches. Replace worn wiring and defective switches immediately...temporary measures are not acceptable. Code compliance required.

9. Fire prevention: Flammable materials should be stored in proper containers and fire-proof metal cabinets. Storage area should be clean and free from sources of ignition. All containers should be labeled. Remove all combustible wastes daily without fail. All students shall be familiar with fire drill procedures and the location of all fire extinguishers. See section 3.2.3 for classes of fires and extinguishers.

10. First Aid station: Check supplies at the beginning of each semester. Students shall be familiar with emergency procedures.

11. Teaching aids: Select posters and charts carefully for shop use. Change outdated materials. A suggestion box can prove to be useful if its use is encouraged.

3.1.2. PREVENTIVE MAINTENANCE INSPECTION

The NATIONAL STANDARD SCHOOL SHOP SAFETY INSPECTION CHECK LIST is recommended for use at the beginning of each school semester with frequent reviews to follow up on deficiencies detected during the normal inspection. See 6.2.3. Appendix for sample form and directions.

3.2. FIRE PREVENTION

Although there have been very few minor fires and explosions within this school system due to the precautions taken by teachers and students, it should not be overlooked with a casual attitude. Have you reviewed your fire drill plan and procedures recently? Have you checked your fire extinguishers for proper pressure and working condition? Some of these checks and inspections are easily overlooked if a systematic inspection is not conducted.

Consult with your local fire department or fire insurance carrier for expert help and various resources to provide training in fire prevention and extinguishment. In addition to this type of training and the required school fire drills the teacher should establish emergency fire procedures due to the wide use of combustible materials within the shop.

3.2.1. CAUSES OF FIRE

There are three elements which must be present to cause a fire:

1. OXYGEN
2. FUEL
3. IGNITION TEMPERATURE ("flash point")

These elements combine to cause fires through unsafe work methods or conditions and careless disposal procedures which can cause spontaneous combustion. See inspection instructions in section 3.1. for housekeeping checks.

3.2.2. SAFETY CHECK

A periodic check by a qualified fire inspector is helpful in detecting probable causes of fires which may not be quite obvious to the teacher. Constant surveillance and participation by all personnel help to prevent unsafe conditions. The following items should be checked continuously:

1. Oxygen: Check for open doors, windows or containers at the end of the day. Don't forget to spot check before going out to lunch or recess when the shop is locked but unattended.

2. Fuel: Check all types of gases or finishing products, storage containers, gauges, valves and piping for leaks. Vapors, fumes and dust should be properly exhausted and all combustible wastes removed from the building daily. Clean up oil, gas, kerosene and other volatile liquid spills immediately. Cap-fired tools and explosives are strictly prohibited in schools.

3.2.2. SAFETY CHECK (Cont'd)

3. Ignition Temperature: Check the following ignition sources...matches, arcs from faulty electrical equipment or wiring, open flames from torches, kilns, burners or electrical arc welding, molten metal, furnaces and hot plates which can ignite fuel or materials by contact. Rags with oil or other combustible liquids will ignite spontaneously when the temperature reaches the "flash point" of the liquid. No smoking shall be allowed in the shop area at any time.

3.2.3. CLASSIFICATION OF FIRES AND TYPES OF EXTINGUISHERS

Fires are classified into different types according to the kind of fuel involved and the type of extinguishing agent required to control them. See 6.3.1. and 6.3.1.1. Appendices.

CLASS "A": Fires in ordinary combustible materials such as wood, paper, coal or fabrics where cooling or quenching is the usual method of extinguishment. Type of extin guisher required: water or soda acid or foam extinguisher. Some types of dry chemical extinguishers may also be used...check the label.

CLASS "B": Fires in flammable liquids such as gasoline, oil, lacquer, kerosene and solvents, etc., smothering to cut off the oxygen source. Do NOT use water or soda acid for this type of fire which will act as a carrier and spread the fire. Type of extinguisher required: carbon dioxide (CO_2), foam, or dry chemical extinguishers.

CLASS "C": Fires in or near electrical equipment or wiring where a non-conducting type of extinguishing agent is required. Do NOT use water, soda acid or foam agents for this type of fire...they can conduct electricity. Carbon dioxide or dry chemical extinguishers have a smothering effect on this type of fire and are considered safe from electrical shock to the user.

CLASS "D": Fires in combustible metals. Special extinguishing agents approved by recognized testing laboratories to be used only.

3.3. COLOR ENGINEERING FOR THE SCHOOL SHOP

Although it is difficult to assess the effects of color on the eye and mind of an individual under a variety of conditions studies have shown certain color combinations are in fact, better than others. Faber Birren, a notable color expert has stated that "The eye has different sensitivity under different conditions of illuminations". The color field has a direct relationship to the illumination which in turn affects the acuity of the eye. It is important to note that as we move away from the natural daylight illumination toward the red, blue and violet end of the color spectrum, the eye, according to Ferree and Rand, has much difficulty in focusing on objects. Conflicting color combinations can also be a hazard in the work area where maximum concentration and coherence is required for safe working conditions.

Color engineering in the school shop is important because it provides for a continuous visual harmony without distracting the student at work and special markings for items which may be hazardous. While it is not attractive by contemporary decorating standards, the color-engineered shop is a comfortable working environment. Robert B. Lytle, Jr., who has done much research and design with color systems has stated that:

> "The basic organization of any shop, with its structuring of machines of various forms and continual operational movement, inherently establishes visual conflicts. The minimizing of such conflicts calls for remedial reorganization in terms of planning, light and color."

Lighting within the shop should be glare-free and shadow-free in the task area. Supplemental lights should be used if the ceiling lights do not suffice. Ceilings should be white to reflect the upward light found in most modern industrial fixtures.

The following color engineering guide should be used by teachers, administrators and building officials for specifying colors for the school shop. Fuller O'Brien paints are used for reference only and paints of equivalent quality and comparable color may be used.

3.3.1. COLOR ENGINEERING REQUIREMENTS FOR PUBLIC SCHOOL SHOPS

COLOR	WHERE USED	PAINT RECOMMENDED
■	On the body or non-critical part of machinery. The base of all tables and work benches should use this same color. The tops of work benches may be left natural, varnished or metal covered. (We do not recommend the painting of tops.)	Paint used in this system must be so formulated so as not to be softened by oils and lubricants. It must have an extra hard glossy surface. Fuller Heavy Duty Enamel C-136 Urban Green or Equal.
▨	As service and dado area color. Wainscot is usually from floor line to a natural break in wall line -- about four to six feet in height.	Fuller Heavy Duty Enamel C-137 Dana or Equal.
□	On all wall surfaces above the dado wainscot.	Fuller C-152 Cape Cod or Equal.
□	Ivory or white on ceiling for reflectance quality.	Fuller or Equal.

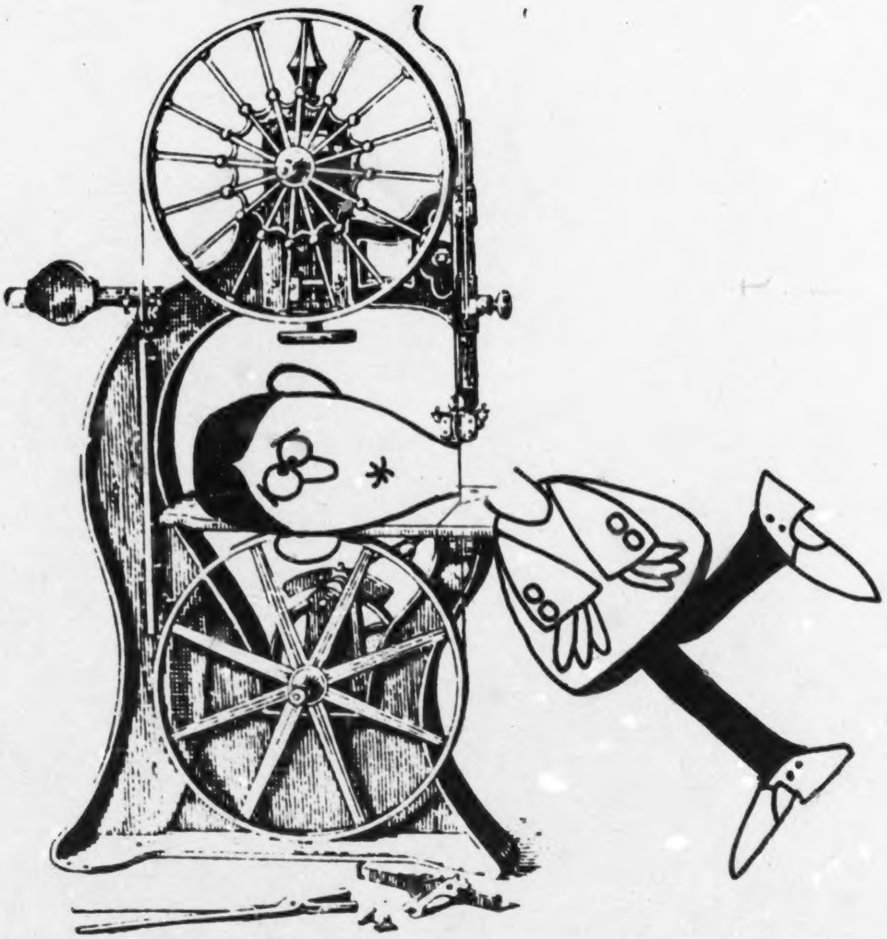
3.3.1. COLOR ENGINEERING REQUIREMENTS FOR PUBLIC SCHOOL SHOPS (Cont'd)

COLOR	WHERE USED	PAINT RECOMMENDED
🟦	Warning Blue shall be used on electrical starting and stopping levers, on switch control boxes. Conduit lines should be banded every 15 to 20 feet with 2-inch band. Do not paint over the instructional plates on the switch boxes.	Fuller 112-22 Bright Blue or Equal.
🟧	Used to caution workers against hazards. Inside of door only on all switch boxes to be Danger Orange. Also any dangerous and moveable parts of machinery where adequate safeguards cannot be provided or where there is much danger where safeguards are temporarily removed for one reason or another. Often used on cutting devices, rollers, pulleys, safety guards, etc.	Fuller 112-18 Bright Orange or Equal.
🟥	Use Fire Red to indicate the location of extinguishers, fire alarm stations, equipment, trucks, water barrels, sand buckets, etc. Do not paint polished brass or copper extinguishers. Fire Red is to be used to indicate only fire prevention and control equipment.	Fuller 112-19 Fire Red or Equal.
🟨	Yellow stripes shall be used to indicate traffic lines, safety and work areas around machines. Yellow and black stripes indicate mobile equipment and shall be used on truck tail gates, cranes, rear end of trailers and other pieces of equipment which in themselves may create a hazard unless the attention of the eye is focussed upon the possible hazard.	Fuller Yellow Traffic Line Finish or Equal.

3.3.1. COLOR ENGINEERING REQUIREMENTS FOR PUBLIC SCHOOL SHOPS (Cont'd)

COLOR	WHERE USED	PAINT RECOMMENDED
⬜	Offers contrast. Use in working area of machinery to obtain proper color relation between material being fabricated and the working surface. To focus worker's attention to the critical working or operating area of the machine. Note: Polished machined surfaces NOT to be painted. They shall be maintained in a polished condition.	Fuller Heavy Duty B-162 Modulation or Equal.
⬜	Where high visibility is necessary, such as on protruding objects on both stationary and moving equipment of where it is necessary to insure attention, such as on crane hooks, stairways, low overhead obstructions, conveyors, finger-lift trucks, unguarded platform edges or pits. (Yellow should be striped with black where positive attention is demanded.) Visibility Yellow is also used for danger signals.	Fuller 112-14 Bright Yellow or Equal.
⬛	To be used on all first-aid cabinets, stretchers, safety signs, etc. (Always use with a white background.) The purpose is to identify first-aid equipment, dispensaries, medicine cabinets, etc. A darker green is also acceptable.	Fuller 112-16 Jade Green or Equal.

EQUIPMENT
4.0



4.0. THE EQUIPMENT

While hand tools can inflict injury on the students it is the power tools and equipment that can cause serious injury and quite possibly, permanent disabilities. The teacher shall inspect the equipment continuously for defects or broken parts which can be hazardous to personnel. If any equipment is unsafe for operation and cannot be repaired immediately, the teacher shall shut down the equipment by disconnecting the power, place an "OUT OF ORDER--DO NOT USE" sign in a conspicuous place on the equipment and warning students about this hazard. Portable equipment should be properly tagged and locked in the office cabinet to prevent further use. Some students tend to ignore obvious defects and will use the equipment if it will run when the power is turned on.

4.1. DAILY EQUIPMENT CHECKS

The teacher should train his students to assist him in checking the equipment for defects daily. Although the teacher is fully responsible for the condition of the equipment, students can be be very helpful in this respect while learning about equipment safety. The following items should be checked:

1. Cleanliness: The equipment and surrounding work area should be clean and free from waste and spills. Safety zones should be properly marked and non-skid grit sheets provided on floors to prevent slips. Use brush or compressed air for cleaning...do not use hands.

2. Protective Gear: All related protective gear should be close at hand for immediate use. A face shield that is stored in a cabinet is inconvenient and student will not use it for just a "short job". Check the condition of the protective gear regularly for defects. Use pushsticks whenever possible.

3. Mounts: All equipment should be securely mounted. Check mounting bolts for tightness and possible wear. Small blocks used to correct an uneven floor condition are not aceptable. Use the correct metal or rubber shims as recommended by the manufacturer.

4. Sharpness: Keep all blades and bits sharp at all times. Lubricate with lightcoat of oil to prevent rust during long storate. Dull blades are extremely dangerous and it can "bite" unevenly or "kick" the material and cause injury to the user. Worn belts or discs on sanders should be replaced for similar reasons.

5. Guards: All guards should be in proper position during use and removed only for cleaning or making adjustments. Moving parts on the guards should be lubricated to work smoothly. Check for worn parts, smashed guards or improper

4.1. DAILY EQUIPMENT CHECKS (Cont'd)

alignment. No drive belt or pulley should be left exposed during the operation of the equipment.

6. Worn Parts: Check your equipment for worn, bent or broken parts. Replace worn adjustment keys or wrenches to prevent undue wear or major parts of the machine. Worn or frayed drive belts are not to be used. Worn or bent shafts on the equipment shall be replaced and teachers shall shut down the equipment until this condition is corrected. Lubricate parts according to the manufacturer's recommendations.

7. Electrical: Check equipment wiring, switches, motors and for proper grounding. Most shops require dust-proof switches and devices. Automotive shops and paint spray booths require explosion-proof wiring. Your city electrical inspector can assist you in this area. National Electrical Code and local ordinances shall apply to all school shop electrical wiring. Check for electrical "shorts" on motors and wiring including portable power tools.

4.2. QUALIFICATIONS AND OPERATING PROCEDURES

Only qualified personnel will be allowed to operate power equipment without exceptions. In addition to the qualification and operating procedures described in the STUDENT SECTION of this guide, instructors are advised to secure cards signed by the student to acknowledge the receipt of safety instruction. This is for your personal protection and should not be dismissed without some consideration. See 6.1.3. Appendix for sample card.

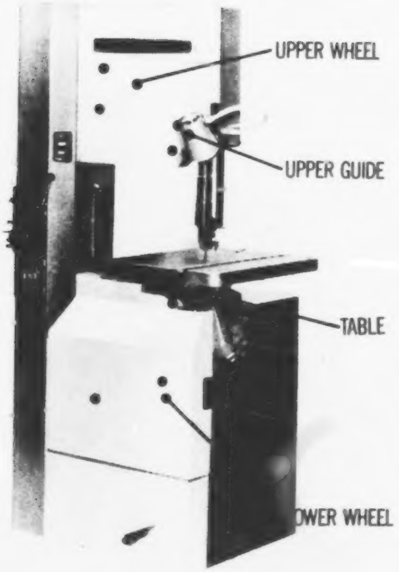
4.3. SAFETY INSTRUCTIONS FOR OPERATING EQUIPMENT

The various equipment in the following section are listed according to the areas in which they most extensively used. Some equipment are used in more than one area but listed only once. Each set of safety instructions is organized according to the following format:

1. illustration (if available)
2. safety instructions
3. diagram of space requirement
4. safety exam (usually on back side)
5. answers to safety exam

4.4. WOODWORKING TECHNOLOGY

4.4.1. BAND SAW

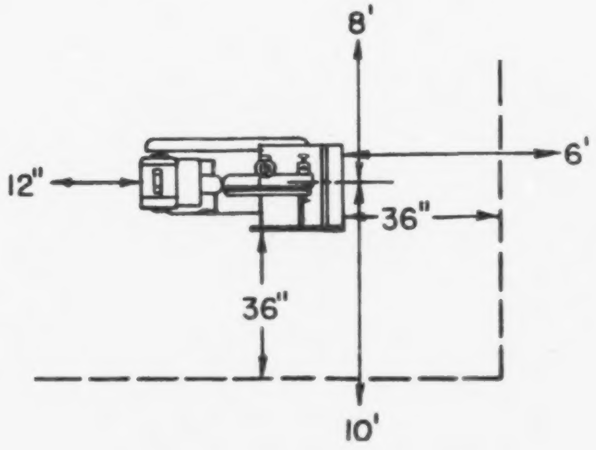


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using band saw.
2. Plan sawing procedure so there will be a maximum forward feed with a minimum of backing out of cuts.
3. Cut only stock with a flat surface.
4. Make sure the proper width saw blade is on the machine for your particular job.
5. Check to see that all guards are in place.
6. Set upper saw guide no higher than 1/4 inch above the stock to be cut.
7. Make adjustments only when the machine is at a "dead" stop.
8. Ask your teacher to approve all special setups.
9. Wear face shield or safety glasses.
10. Make sure that no one but you is inside the safety zone.
11. Turn "on" power.
12. Keep fingers a safe distance from saw blade. Do not allow your hands to cross the saw line when operating the saw.
13. Feed material into machine at a moderate rate of speed.
14. Keep saw blade from twisting or binding when cutting curves.
15. Allow machine to come to a "dead" stop before backing out of a long cut.
16. Keep waste from accumulating on the saw table.
17. Step back immediately if the saw blade breaks or comes off. Shut off power, if possible, without endangering self. Notify your teacher.
18. Turn "off" power after using band saw and stand by until machine comes to a complete stop.
19. Clear away waste on the table and on floor around machine.

4.4.1. BAND SAW (Cont'd)

SPACE REQUIREMENTS FOR BAND SAW



SAFETY EXAM

( ) 1. Make all adjustments on the band saw: a) only when the machine is at a dead stop; b) while the machine is coasting; c) when the power is on; d) with the saw blade off.

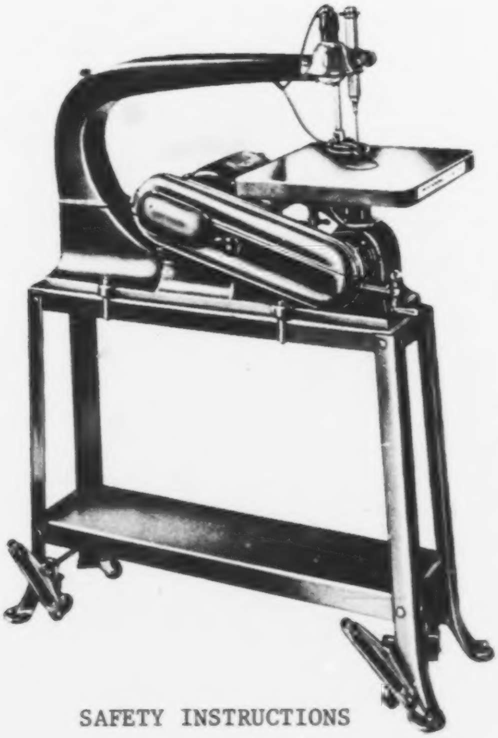
( ) 2. Set upper saw guide of the band saw; a) no higher than 1/4 inch above the stock; b) 1/2 inch or more above the stock: c) snug against the stock; d) when the power is off and the saw is coasting.

( ) 3. Plan your sawing procedure on the band saw so that: a) small curves can be cut easily with a wide blade; b) there will be little scrap on the table c) there will be a maximum forward feed with a minimum of backing out of cuts; d) with a forceful twist a curve can be cut.

( ) 4. When the band saw blade breaks or comes off, you should:
a) continue with your cutting until blade stops: b) call your teacher to help turn the power off; c) look down into the table insert to see what happened; d) step back immediately and turn the power off without endangering yourself, then notify your teacher.

Answers: 1. a; 2. a; 3. c; 4. d.

4.4.2. SCROLL SAW (JIG SAW)

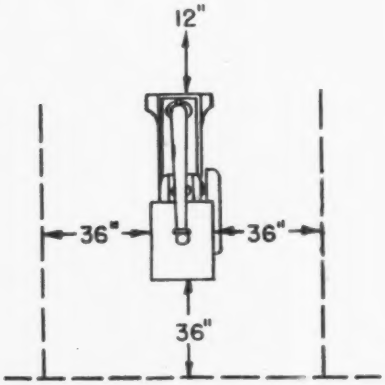


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using the scroll saw.
2. Cut only stock with a flat surface on the bottom.
3. Make adjustments only when the machine is at a "dead" stop.
4. Make sure the saw blade is the proper size for the job and that it is securely attached in the upper and lower vise jaws.
5. Check correct tension for the blade.
6. Adjust hold-down so it will be as close as possible to the work.
7. Turn machine by hand (if possible) to make sure all parts are clear.
8. Make sure that no one but you is inside the safety zone.
9. Select correct machine speed for material to be cut.
10. Wear face shield or safety glasses.
11. Turn "on" power.
12. Hold material firmly and feed into the machine at a moderate rate of speed.
13. Make turns carefully. Do not twist blade.
14. Keep fingers aways from path of saw blade.
15. Report mechanical defects or a broken blade to your teacher.
16. Turn "off" power after using scroll saw and stand by until the machine comes to a complete stop.
17. Clear away scraps of wood on the table only when the power is "off."
18. Clean off machine and surrounding area.

4.4.2. SCROLL SAW (JIG SAW) (Cont'd)

MINIMUM SPACE REQUIREMENTS FOR SCROLL SAW



SAFETY EXAM

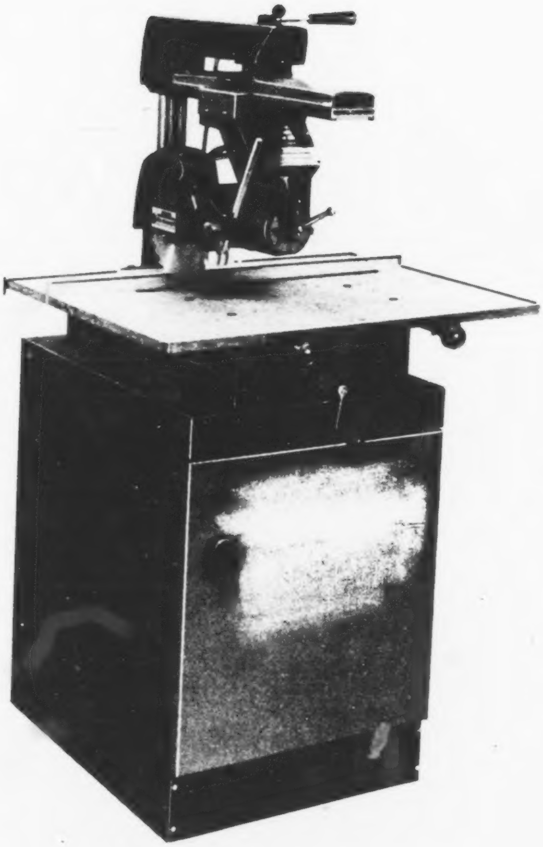
( ) 1. The scroll saw blade is installed to cut: a) on the up stroke; b) on th down stroke: c) on both the up and down strokes: d) at a high rate of speed.

( ) 2. Before starting the scroll saw, check the hold-down adjustment to make sure: a) there is a 1/2 inch clearance between it and the stock; b) it is as close as possible to the work; c) it is tight against the stock; d) there is a gap as wide as the blade.

( ) 3. Stock to be cut on the scroll saw should be: a) soft; b) hard; c) round on the bottom: d) flat on the bottom.

Answers: 1. b; 2. b; 3. d.

4.4.3. RADIAL ARM SAW



SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using saw.
2. Ask your teacher to approve all special setups.
3. Use guards on machine. Secure permission from your teacher before removing guard for jobs where use of guard is impractical.
4. Make sure no one but you is inside the safety zone.
5. Wear face shield or safety glasses.
6. Hold stock firmly against fence.
7. Stand to one side and keep hands away from the direction of travel of saw blade.
8. Turn "on" power.
9. Feed saw into material only as fast as it will easily cut.
10. Cut only one piece of stock at a time.
11. Turn the power "off" and wait until the machine has come to a complete stop before attempting to pick up any stock dropped to the floor.
12. Remove scraps from path of saw blade only when saw is at a "dead" stop.

4.4.3. RADIAL ARM SAW (Cont'd)

13. Turn "off" power after using saw, return saw to beginning position carefully, and stand by until machine comes to a complete stop.
14. Clean table and surrounding area.

SAFETY EXAM

( ) 1. Remove scraps from the path of the radial-arm saw blade with: a) your fingers; b) a steel ruler; c) a push stick; d) a piece of wood or your finger only after the machine has come to a complete stop.

( ) 2. At the completion of each cut, the radial-arm saw blade must be: a) returned to its beginning position behind the guide fence; b) stopped so operator can take another pass while pushing saw away from him: c) left at a point nearest to the operator; d) lowered for realignment.

Answers: 1. d; 2. a.

4.4.4. TABLE SAW

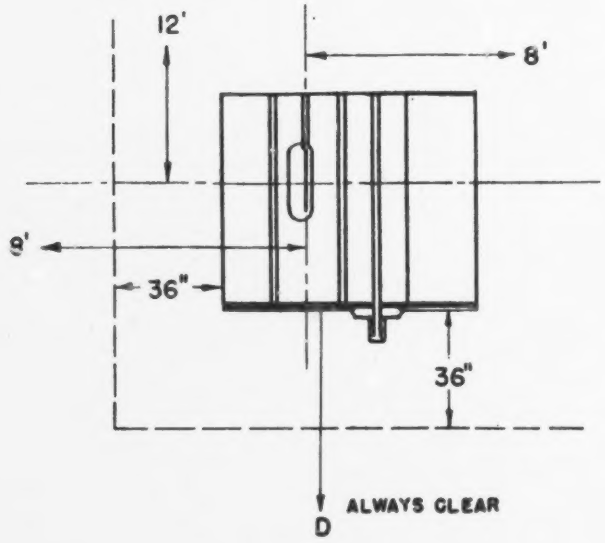
SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using the table saw.
2. Be sure that all lumber is free from loose knots, nails, paint, or pebbles.
3. Select and install proper saw blade for the work to be done.
4. Make sure blade is sharp and free of cracks or other defects.
5. Make adjustments only when the machine is at a "dead" stop.
6. Limit saw blade extension to 1/8 inch or less above the stock being cut. Opinions may differ so check with your teacher.
7. See that all guards and other safety devices are in their proper position.
8. Use ripping fence or cutoff gauge when cutting material.
9. Ask your teacher to approve all special setups.
10. Use clearance block when ripping fence is used as a gauge.
11. Before cutting cylindrical stock, check with your teacher.
12. Be certain there is an adequate number of proper push sticks available.
13. Make sure that no one but you is inside the safety zone.
14. Wear face shield or safety glasses.
15. Stand to one side of the line of the saw blade.
16. Turn "on" power.
17. Keep fingers or any part of hands clear of path to the saw blade.
18. Stop saw and move out of operating zone before responding to anyone trying to attract your attention.
19. Feed stock only as fast the saw will freely cut.
20. Push the stock by yourself. Use push stick when ripping narrow pieces of stock.

4.4.4. TABLE SAW (Cont'd)

21. Make certain that a helper tailing off only supports the material. Never carry or pass material over a running saw.
22. Turn "off" power after using table saw and stand by until the machine has come to a complete stop.
23. Clear away scraps of wood on the table only after the saw comes to a complete stop.
24. Reset saw adjustment back to the normal position when an operation requiring a special setup has been completed.
25. Dust off machine and clean surrounding floor area.

MINIMUM SPACE REQUIREMENTS FOR TABLE SAW



SAFETY EXAM

( ) 1. The saw guard must always be in place over the saw blade of the table saw except when: a) cutting stock more than 2 inches thick; b) using a combination blade; c) your teacher has authorized its removal for special setups; d) cutting short pieces.

( ) 2. When using a helper on the table saw, the assistant should: a) support the stock so it is level with the table; b) hold the stock and pull; c) use a brush to clear sawdust from the blade; d) lift the piece of wood so it will slide easily.

( ) 3. A push stick should be used when operating the table saw to: a) rip short or narrow pieces of stock; b) adjust the saw; c) remove scraps; d) turn on the power.

Answers: 1. c; 2. a; 3. a.

4.4.5. SANDER (DISC & BELT TYPES

DISC

BELT

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using sanding machine.
2. Making adjustments only when sander is at a "dead" stop. Portable sander electric cord should be disconnected.
3. Check belt or disc for breaks or tears.
4. Be sure switch is in a "off" position and machine is on its side before plugging in electric cord on a portable sander.
5. Hold work securely.
6. Wear face shield or safety glasses.
7. Turn "on" power.
8. Keep fingers away from the abrasive surface on the sander.
9. Sand on downward motion side of disc sander.
10. Use special care in sanding small or irregular pieces. Check with your teacher.
11. Feed stock into the abrasive material at a moderate rate of speed and pressure. Do not apply heavy, downward pressure on portable sander.
12. Turn "off" power after using sander and stand by until machine has come to a complete stop. Rest portable sander on its side.
13. Disconnect electric cord of portable sander.
14. Clean machine with a brush or airhose. Return portable sander to designated place.

SAFETY EXAM

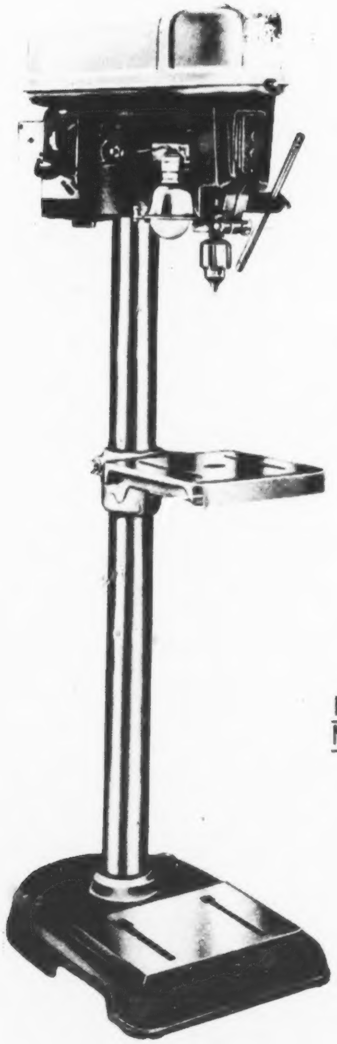
( ) 1. Make all adjustments on the portable sander: a) when the power is on; b) when another student is holding the sander; c) while it is in gear; d) while the electric cord is disconnected.

( ) 2. When operating a disc sander, you should feed your work against the disc: a) rim; b) center; c) upward motion side; d) downward motion side.

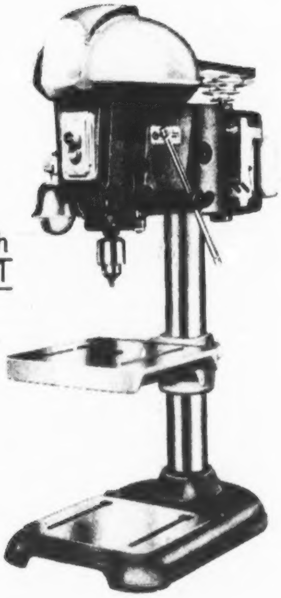
( ) 3. When sanding small pieces of material on a sander, you should: a) hold it with your finger; b) use a tweezer; c) consult with your teacher; d) slow down the speed.

Answers: 1. d; 2. d; 3. c.

4.4.6. DRILL PRESS



Floor Model



Bench Model

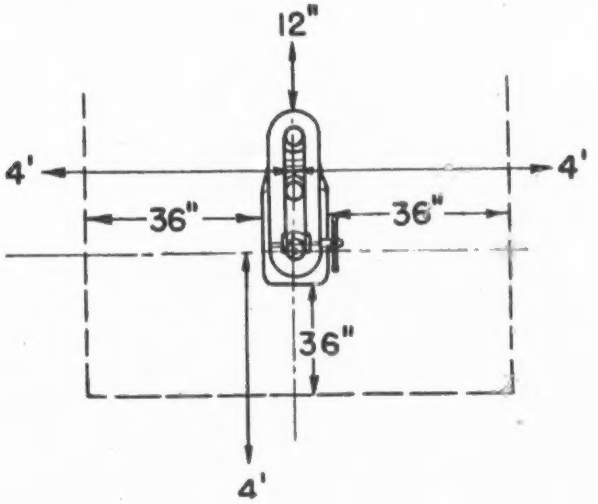
SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using the drill press.
2. Shift belt and make other adjustments only when the power switch is turned "off." Adjust speed on variable speed drill press only with the power "on."
3. See that belt guard is in place.
4. Check table and head of drill press to make sure that thewy are secure.
5. Select proper drill bit (be sure it is sharp) and coolant.
6. Wear face shield or safety glasses.
7. Make sure that no one but you is in the safety zone.
8. Remove check key immediately after using it.
9. Use drill press vise whenever possible. Clamp vise or work to drill press table.
10. Turn "on" power.
11. Keep hands aways from revolving spindle, chuck, drill bit, and chips.
12. Operate feed handle so that drill bit cuts evenly into work.
13. Ease up on feed pressure when drill begins to break through material.
14. Back drill bit out as soon as hole is drilled.
15. Stop the drill press before attempting to remove work, chips, or cuttings. Use a brush to remove chips or shavings.
16. Step away immediately if work comes loose and is seized by drill bit; shut off power, if possible, without endangering self.

4.4.6. DRILL PRESS (Cont'd)

17. Turn power "off" after using drill press and stand by until machine comes to a complete stop.
18. Clean off drill press table and surrounding area. Return drill bits, coolants, and clamping devices to designated place.

DRILL PRESS SPACE REQUIREMENTS



SAFETY EXAM

( ) 1. Drill press work should be held: a) with a pair of pliers; b) with your hands; c) in a vise or firmly clamped to the table; d) by your friend at all times.

( ) 2. When the drill bit begins to break through the work, you should: a) maintain the same feed pressure; b) apply more pressure; c) ease up on the feed pressure; d) stop the drill press immediately.

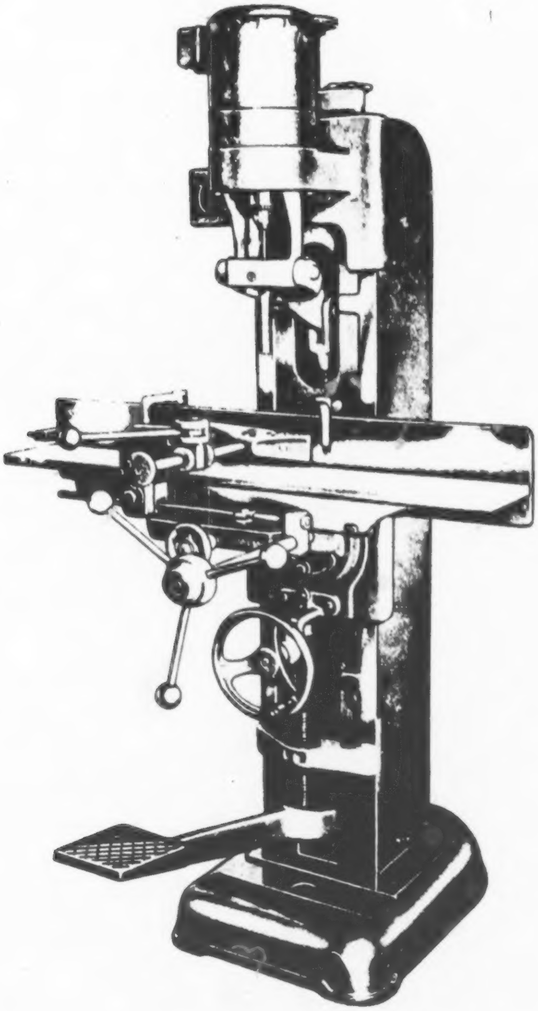
( ) 3. The best way to remove chips or shavings from the table is with: a) your hands; b) a small drill bit; c) a long ruler; d) a brush.

( ) 4. By removing the chuck key from the chuck before turning on the power, you will prevent: a) the chuck from being damaged; b) the spindle from becoming unbalanced; c) the drill from breaking; d) the chuck key from being thrown out at a terrific speed.

( ) 5. If your work is seized by the drill bit, you should: a) grab it with your hands; b) stop the machine immediately; c) exert more feed pressure; d) decrease the feed pressure.

Answers: 1. c; 2. c; 3. d; 4. d; 5. b.

4.4.7. MORTISER



SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using mortiser.
2. Clamp all stock securely on table.
3. Make adjustments when machine is at a "dead" stop.
4. Know correct method of installing mortiser bit and chisel.
5. Make adjustments for depth stops and lateral travel.
6. Make sure that no one but you is inside the safety zone.
7. Wear face shield or safety glasses.
8. Turn "on" power.
9. Keep hands away from chisel when power is on.
10. Feed chisel only as fast as machine will easily cut.
11. Turn "off" power immediately if chisel burns or if cutting is difficult. Check with your teacher.
12. Lift bit clear off the stock before moving table.
13. Turn "off" power after using mortiser.
14. Clean off mortiser table.

Note: For mortiser space requirements, see drill press.

4.4.7. MORTISER (Cont'd)

SAFETY EXAM

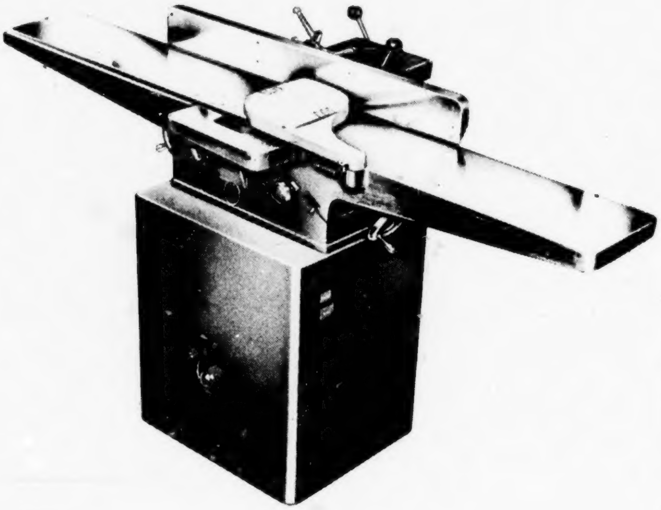
( ) 1. Make sure that the chisel and bit of the mortiser are: a) sharpened before and after each use; b) properly aligned; c) adjusted so that the chisel leads the bit; d) cooled after each cut.

( ) 2. If cutting on the mortiser becomes difficult or the chisel starts to burn, you should; a) wax or grease chisel; b) apply oil on the bit; c) press harder on the pedal; d) turn off the power and notify the teacher.

( ) 3. When the mortiser is turned on, you should: a) adjust the depth of cut; b) change alignment of chisel; c) keep your hands from bit and chisel; d) check the lateral adjustments.

Answers: 1. b; 2. d; 3. c.

4.4.8. JOINTER

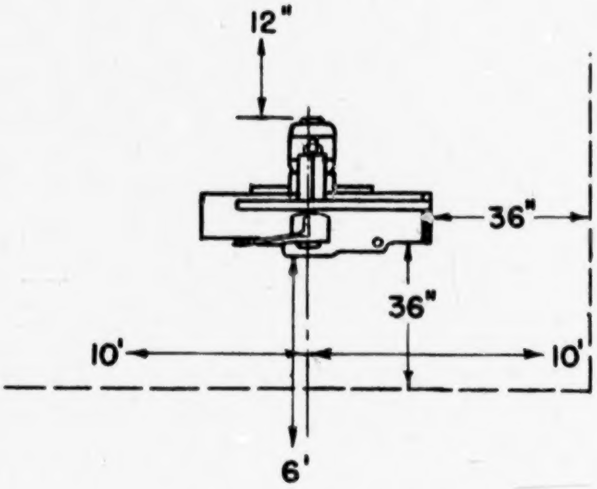


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using jointer.
2. Use only clean lumber. Inspect all wood for checks, loose knots, or other defects.
3. Make sure only 12 inches or longer stock is used.
4. Clamp fence firmly and see that guard is in place over knives.
5. Make adjustments only when machine is at a dead stop.
6. Limit cuts on flat surfaces to 1/16 inch, and 1/8 inch or less on the edges.
7. Ask your teacher to approve all special setups.
8. Make sure that no one but you is inside the safety zone.
9. Turn "on" power.
10. Keep hands at a safe distance from the revolving head. Use an approved push stick whenever possible.
11. Feed the stock slowly; consider the grain.
12. Push stock past the knives so that the guard will return before picking up the stock.
13. Turn "off" power and stand by until machine has stopped.
14. Clean jointer table with brush or airhose.

4.4.8. JOINTER (Cont'd)

SPACE REQUIREMENTS FOR JOINTER



SAFETY EXAM

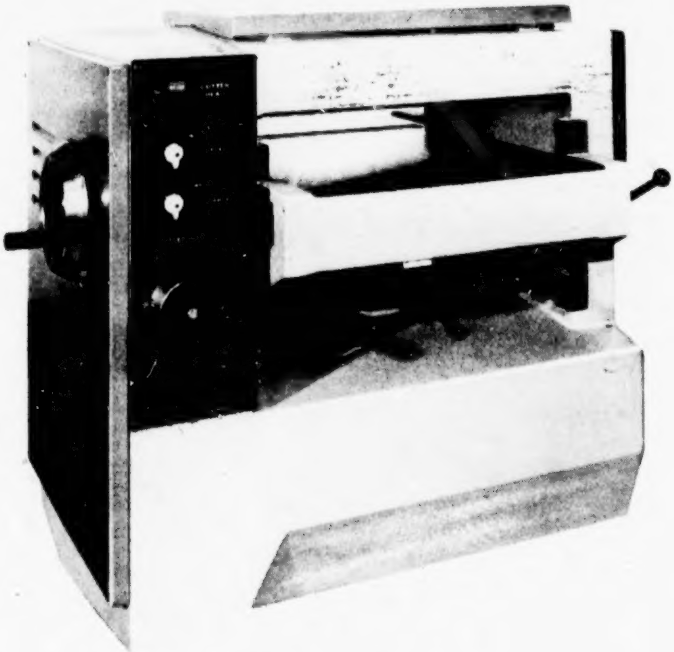
( ) 1. In adjusting the depth of cut on the jointer for a wide surface board, limit the cut to: a) 1/16 inch; b) 1/8 inch; c) 1/4 inch; d) 3/16 inch.

( ) 2. The shortest length of stock that can be safely cut on the jointer is: a) 4 inches; b) 8 inches; c) 10 inches; d) 12 inches.

( ) 3. Before picking up stock that has been surfaced on the jointer, make sure you have pushed the stock far enough past the cutter knives so that the: a) stock drops clear of the table; b) push stick will hit the knives; c) outfeed table raises the material above the level of the knives; d) guard will return over the cutter knives.

Answers: 1. a; 2. d; 3. d.

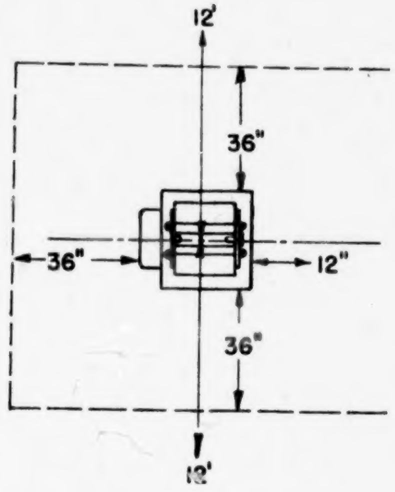
4.4.9. PLANER (SURFACER)



SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using planer.
2. Use only clean lumber. Be sure that all wood is free from loose knots or other defects.
3. See that length of stock is longer than the distance between centers of feed rolls.
4. Make adjustments only when machine is at a "dead" stop.
5. Adjust cut to measurements taken on thickest part of the board.
6. Limit cuts to 1/8 inch or less on narrow boards; 1/16 inch or less on wide boards.
7. Run thin stock through planer on top of a thick surfaced board.
8. Make sure that no one but you is inside the safety zone.
9. Wear face shield or safety glasses.
10. Turn "on" power.
11. Stand to one side of planer when machine is in operation. Do not lower your head to look into planer.
12. Keep hands away from feed rolls and away from board already gripped by the feed rolls.
13. Turn "off" power and call your teacher if machine does not seem to operate properly.
14. Allow material to travel completely through planer before making any additional adjustment in depth of cut.
15. Turn "off" power after using planer and stand by until the machine comes to a complete stop.
16. Clean machine and surrounding area.

MINIMUM SPACE REQUIREMENTS FOR PLANER



SAFETY EXAM

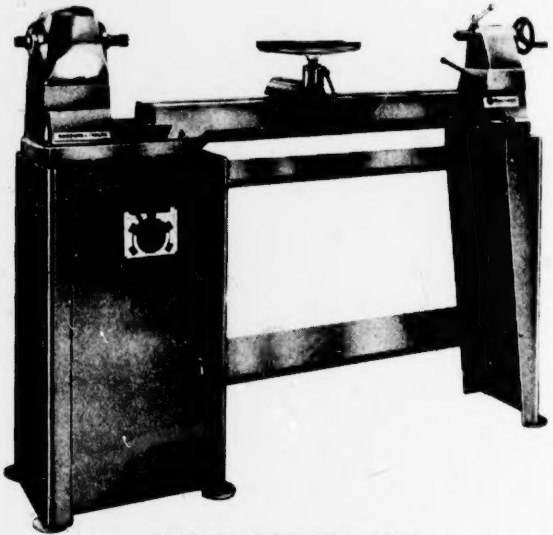
( ) 1. Minimum length stock that can be run through the planer is: a) 6 inches; b) longer than the distance between center of feed rolls; c) determined by the depth of cut; d) left up to the discretion of the operator.

( ) 2. When operating the planer, you should stand: a) directly behind the machine; b) slightly to one side so you could look into the planer; c) in an upright position and to one side of the machine; d) to the left with your hand on the planer to feel the vibrations.

( ) 3. Limit your cuts on the planer to: a) 1/2 inch; b) 1/4 inch; c) 1/8 inch on narrow boards and 1/16 inch on wide boards; d) half the thickness of the stock.

Answers: 1. b; 2. c; 3. c.

4.4.10. LATHE (WOODTURNING)



SAFETY INSTRUCTIONS

General Turning Instructions - See Metal Lathe

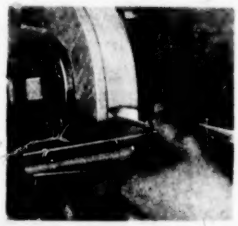
1. Obtain permission from your teacher before using lathe.
2. Roll loose sleeves above elbows and remove or fasten any loose clothing.
3. Make sure stock is free from checks, loose knots, or other defects.
4. Make certain all glued work is properly glued and dry.
5. Be sure stock is correctly mounted in lathe.
6. Clamp tool rest holder firmly.
7. Be certain tool rest is adjusted correctly.
8. Make adjustments of tool rest only when lathe is at a "dead" stop.
9. Shift belt on belt-driven lathes only when lathe is at a "dead stop. Change speeds on variable speed lathe only with the power on.
10. Check sharpness of turning tools and condition of handles.
11. Wear face shield or safety glasses.
12. Start lathe at lowest speed when beginning operation.
13. Make sure that no one but you is inside the safety zone.
14. Stand to one side when power is first turned on,
15. Grasp turning tool firmly with both hands while cutting stock.
16. Hold turning tool firmly against tool rest.
17. Keep hands away from stock while it is revolving.
18. Use correct amount of tool pressure against stock.
19. Stop lathe when using calipers or ruler.
20. Maintain tool rest as close as possible to stock by making frequent adjustments.
21. Remove tool rest when sanding and finishing.
22. Shut "off" power after using lathe and stand by until the machine comes to a complete stop.
23. Clean machine with brush or airhose.

4.4.10. LATHE (WOODTURNING) (Cont'd)

Spindle Turning Instructions

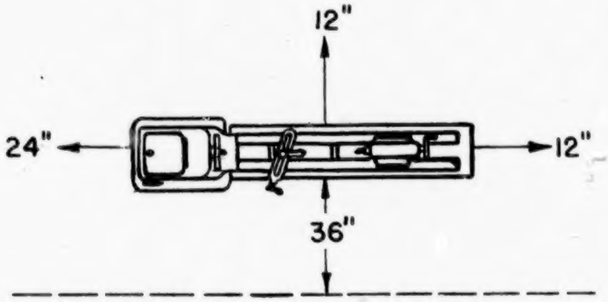
1. See that both center are properly embedded in the stock.
2. Clamp tailstock firmly in place and tighten screw.
3. Turn spindle (rough stock) one revolution by hand.
4. Start lathe at lowest speed.
5. Turn stock down to cylindrical form before using a higher speed. Maintain correct tool rest adjustment.
6. Regulate speed according to the diameter of the work.

Faceplate Turning Instructions



1. Rough cut stock circular on band saw or scroll saw.
2. Select proper size faceplate.
3. Fasten stock or sub-base glued to stock (through paper) to faceplate with screws. Be sure screws are tight.
4. Have teacher check fastening and adjustments.
5. Check depth of cut in work to avoid striking screws with turning tool.
6. Be certain tool rest adjustment is correct and is correctly maintained.
7. Revolve work once by hand.
8. Use lowest speed when beginning operation.
9. Regulate speed according to diameter of work.
10. Frequently check screws to be sure they do not loosen.

SPACE REQUIREMENTS FOR LATHE (WOODTURNING)



4.4.10. LATHE (WOODTURNING) (Cont'd)

SAFETY EXAM

( ) 1. Make all adjustments on the lathe: a) while machine is slowly turning; b) when machine is at a dead stop; c) after initial cuts are made; d) when the teacher is present.

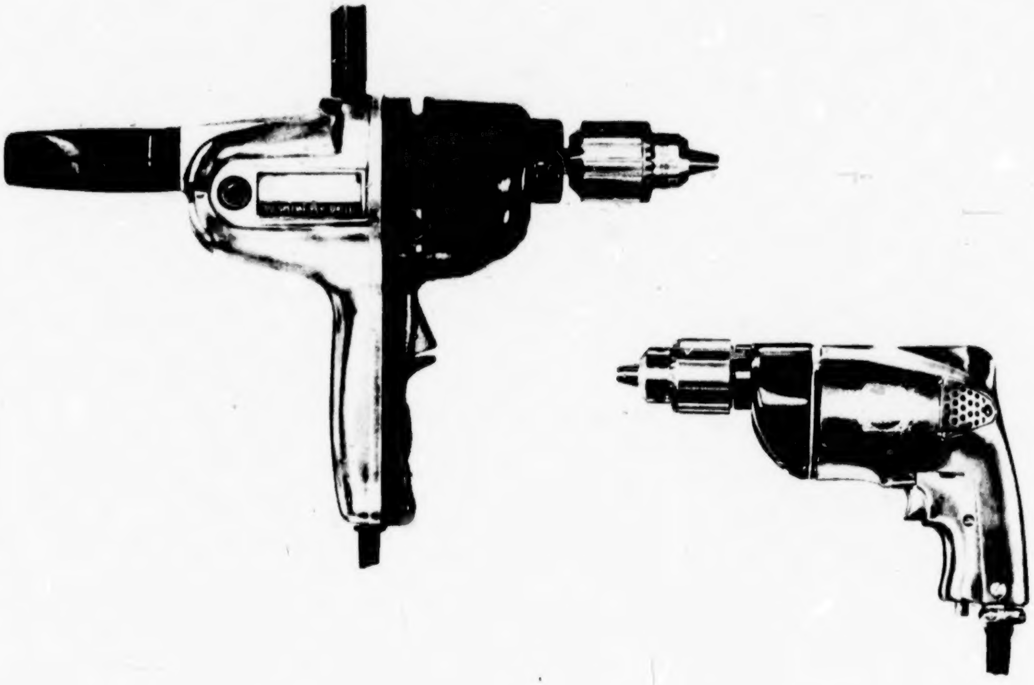
( ) 2. It is best to set tool rest so it is: a) in slight contact with the stock to reduce chatter; b) the same width as the lathe tool being used; c) 1/4 inch or less from the rough stock; d) below and to left of center.

( ) 3. When starting lathe for a beginning operation, you should use: a) the highest speed; b) the lowest speed; c) a medium speed; d) a speed of 5,000 rpm.

( ) 4. Hold lathe turning toool: a) only with your fingers; b) tucked under your armpit; c) firmly against the tool rest; d) flat on the holder.

Answers: 1. b; 2. c; 3. b; 4. c.

4.4.11. PORTABLE ELECTRIC DRILL



SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using drill.
2. See that a grounded wire is connected to the drill and that drill, electric cord, and plug are dry at all times.
3. Select proper drill bit (be sure it is sharp) and coolant.
4. Make sure switch is in an "off" position.
5. Remove chuck key immediately after using it.
6. Plug in electric cord and hold drill firmly.
7. Turn "on" power.
8. Keep hands away from revolving spindle and drill bit.
9. Apply straight and strady pressure on the drill.
10. Ease up on pressure just before drill begins to break through material.
11. Back drill out as soon as hole is drilled.
12. Turn "off" power and hold drill firmly until it comes to a "dead" stop. Rest drill on its side. Return drill to designated place when through using it, after disconnecting cord.

4.4.11. PORTABLE ELECTRIC DRILL (Cont'd)

SAFETY EXAM

( ) 1. Select a location that is dry and not grounded for using a portable electric tool so as to avoid: a) wetting your feet; b) soiling the equipment; c) serious electric shock; d) discoloring the cord.

( ) 2. Before plugging in the portable electric drill, you should: a) remove the drill; b) check the outlet; c) make sure the switch is off; d) disconnect the ground wire.

( ) 3. When you turn off the switch on the portable electric drill, you should: a) inspect the armature; b) hold the drill firmly until it comes to a dead stop; c) let go of the drill; d) hold the chuck to slow it down.

Answers: 1. c; 2. c; 3. b.

4.4.12. PORTABLE ROUTER

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using the router.
2. Make adjustments only when electric cord is disconnected from power source.
3. Select proper bit or cutter.
4. Tighten all bits and cutters with proper wrenches.
5. Fasten stock firmly with vise or clamp.
6. Ask your teacher to approve setup and adjustment.
7. Be sure switch is in an "off" position and machine is on its side before plugging in electric cord.
8. Wear face shield or safety glasses.
9. Hold machine firmly.
10. Turn "on" power.
11. Keep hands clear of revolving cutters. Use both hands to operate router.
12. Feed cutter slowly into the material.
13. Turn "off" power, wait until machine comes to a complete stop, rest machine on its side after a desired cut has been completed.
14. Disconnect electric cord. Clean and return machine to its designated place.

4.4.12. PORTABLE ROUTER (Cont'd)

SAFETY EXAM

( ) 1. Before changing bits or cutters or making adjustments on the router, make sure: a) the electric cord is disconnected from the power source; b) a plier is used; c) to turn blades by hand; d) other students are at a safe distance.

( ) 2. When cutting with the router, you should: a) attempt to make as deep a cut as possible; b) feed the cutter as fast as possible; c) hold the electric cord with one hand; d) keep hands clear of the revolving cutters.

Answers: 1. a; 2. d.

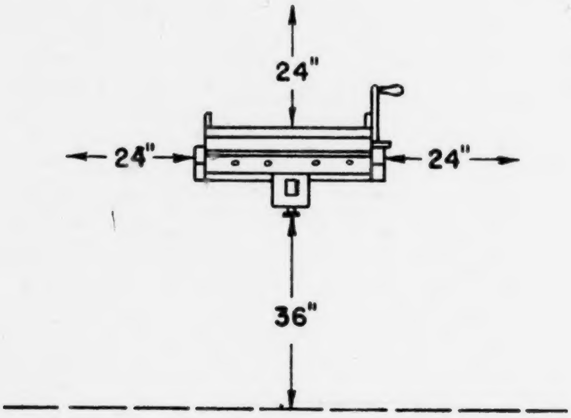
4.5. METALWORKING TECHNOLOGY

4.5.1. BAR FOLDER

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using bar folder.
2. Remove sharp burrs and edges on sheet metal.
3. Fold only single thickness of sheet metal within capacity of the folder.
4. Make sure no one but you is inside the safety zone.
5. Keep fingers away from the folder blade during the bending operation.
6. Hold handle firmly and do not let it drop.
7. Let the bar down slowly after completing a bend.

BAR FOLDER SPACE REQUIREMENTS



4.5.1. BAR FOLDER (Cont'd)

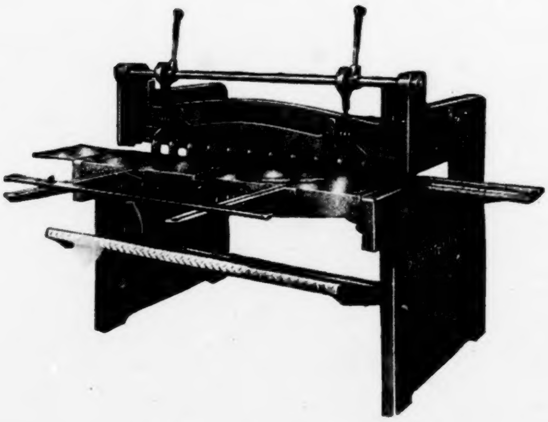
SAFETY EXAM

( ) 1. When folding metal in the bar folder, you should: a) keep your fingers away from the folding bar; b) let the folding bar drop; c) always fold across a hem; d) feed the work as rapidly as possible.

( ) 2. When using the bar folder, the handle should be: a) held by another person at all times; b) let down slowly; c) thrown back; d) rotated.

Answers: 1. a; 2. b.

4.5.2. SHEAR

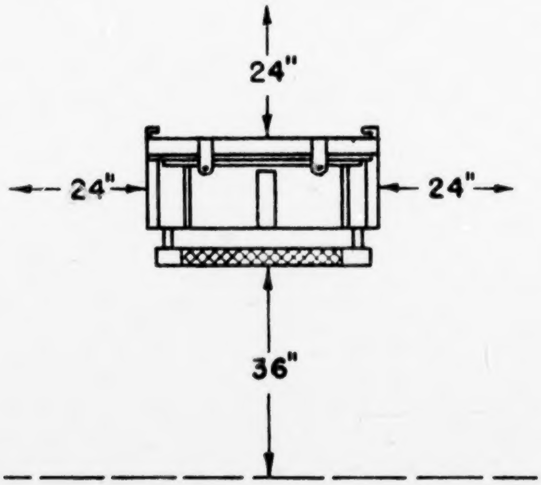


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using shear.
2. Follow manufacturer's specifications as to gauge of sheet metal that can be safely cut.
3. Make sure that no one but you is inside the safety zone.
4. Stand directly in front of machine.
5. Feed piece of metal into shear from front (operator's position). Gloves should be worn when handling sheet metal, but never around moving machinery.
6. Cut narrow strips of metal crosswise only. Keep fingers away from clamp and blade.
7. Hold stokc securely against guide.
8. Make sure the foot that is not being used to operate treadle is clear before pushing down on treadle.
9. Regulate pressure on treadle according to gauge and type of stock. Keep foot on treadle to ease its return to normal position.
10. Allow small pieces of metal being cut to drop into a container or to the floor.
11. Clean trimmings off machine and floor when work is completed. Use care when picking up trimmings.

4.5.2. SHEAR (Cont'd)

SPACE REQUIREMENTS FOR SHEAR



SAFETY EXAM

( ) 1. The shear must be operated by: a) several students at once; b) a student and his helper; c) only one person at a time; d) by the teacher and a helper.

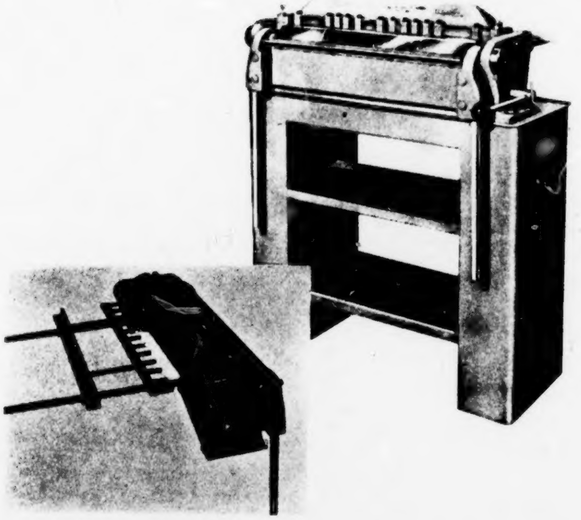
( ) 2. Make sure that the foot that is not being used to operate the foot treadle of the shear is kept: a) on the treadle; b) under the treadle; c) clear of the treadle; d) off the treadle.

( ) 3. When using a shear, keep your fingers: a) near the clamp and blade; b) under the clamp; c) near the blade; d) away from the clamp and the blade.

( ) 4. After pushing down on the treadle for a cut, allow the treadle to: a) return to its normal position as rapidly as possible; b) return it part way; c) return slowly to its normal position; d) stay down.

Answers: 1. c; 2. c; 3. d; 4. c.

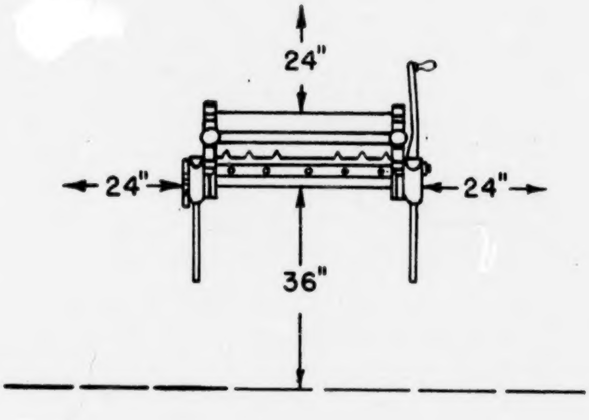
4.5.3. BOX AND PAN BRAKE



SAFETY INSTRUCTIONS

1. Obtain permission from the teacher before using brake.
2. Keep fingers clear of clamping bar and bending load.
3. Make sure no one but you is inside the safety zone (clear of counter balance).
4. Fold only single thickness of sheet metal within capacity of the brake.

SPACE REQUIREMENTS FOR BRAKE



4.5.3. BOX AND PAN BRAKE (Cont'd)

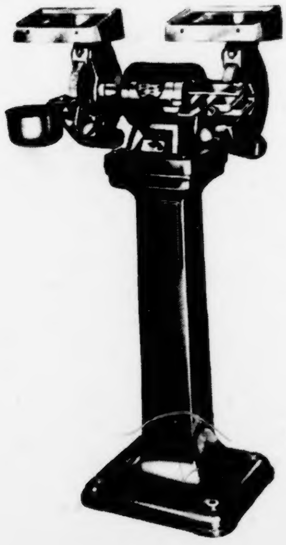
SAFETY EXAM

( ) 1. Before operating the brake, you should: a) drop the lead; b) make sure that everyone is clear of the counter balance; c) remove the bending load; d) remove the leaf.

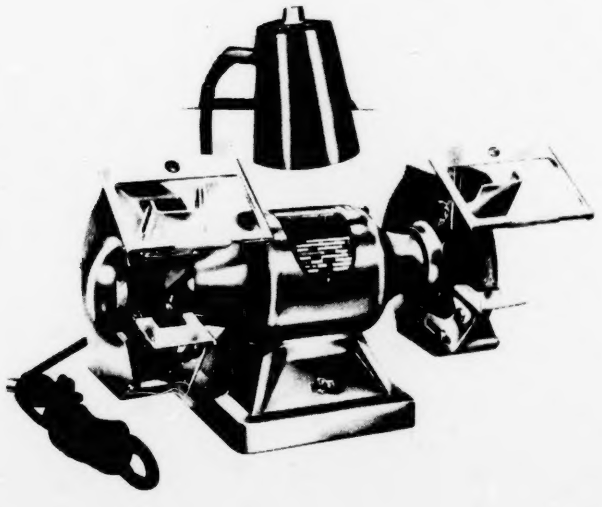
( ) 2. When using the brake, keep your fingers: a) on the clamping bar; b) on the bending leaf; c) on the counter balance; d) clear of the clamping bar.

Answers: 1. b; 2. d.

4.5.4. GRINDER



PEDESTAL-MOUNTED
GRINDER



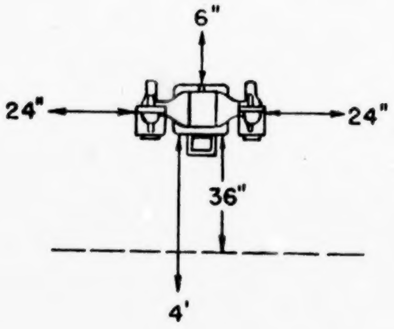
BENCH-MOUNTED
GRINDER

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using grinder.
2. Check gap between tool rest and wheel to see that it is not more than 1/8 inch.
3. Dress wheel when necessary.
4. See that guard is in place.
5. Wear face shield or safety glasses and use glass safety shield on grinder.
6. Make sure that no one but you is in the safety zone.
7. Stand to on side of wheel.
8. Turn "on" power. Keep fingers away from wheel while it is in motion.
9. Hold work with hands. Ask teacher for special instruction and permission to grind small pieces.
10. Do not grind soft metals such as lead, copper, or brass.
11. Use the face of the wheel only. Avoid excessive pressure against wheel.
12. Keep work in motion across face of wheel.
13. Turn "off" power after using grinder.
14. Clean grinder and area with a brush or an air-gun.

4.5.4. GRINDER (Cont'd)

SPACE REQUIREMENTS FOR GRINDER



SAFETY EXAM

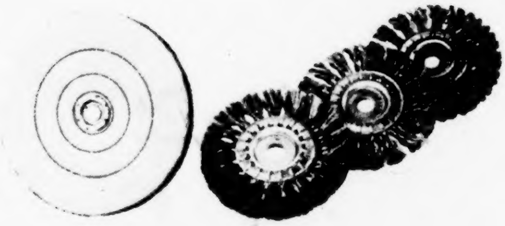
( ) 1. The grinder tool rest must be securely fastened: a) 1" away from the wheel; b) when the grinder is on; c) when wheel is not in motion; d) after the power is turned off and the wheel is coasting.

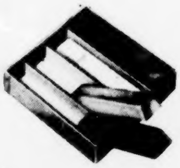
( ) 2. Set grinder tool rest: a) 1/4" away from the wheel; b) 1/2" away from the wheel; c) no more than 1/8" away from the wheel; d) so wheel rubs lightly against tool rest.

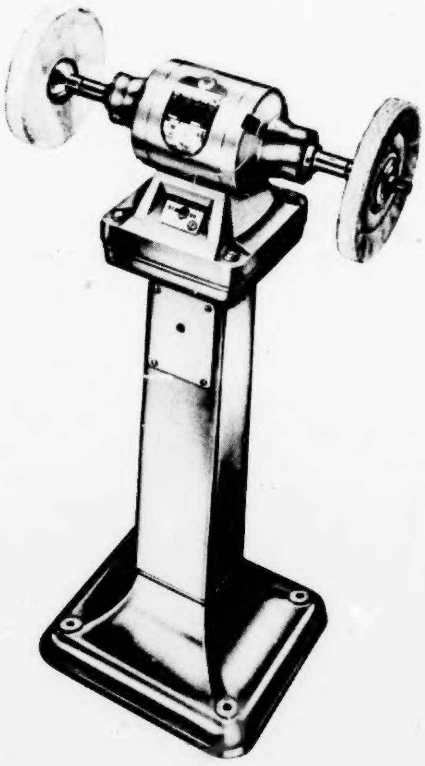
( ) 3. To grind small pieces of stock, you should: a) hold them with your bare hands; b) hold them using a glove; c) receive special instruction and permission from your teacher; d) use a very fine wheel.

Answers: 1. c; 2. c; 3. c.

4.5.5 BUFFER





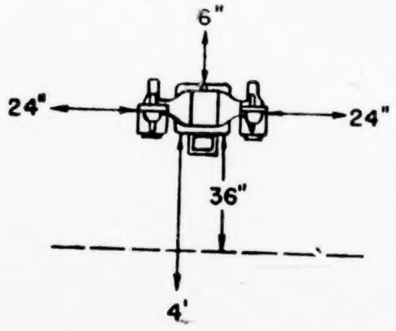


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using buffer.
2. Wear face shield or safety glasses.
3. Make sure that no one but you is inside the safety zone.
4. Hold work with both hands. Ask teacher for special instruction and permission to buff small pieces.
5. Turn "on" power.
6. Keep hands away from the wheel while it is in motion.
7. Apply compound sparingly.
8. Hold work below center (approximately 1/2 inch) as wheel revolves toward you.
9. Buff flat surfaces from center toward lower edge. Sharp edges should point downward.
10. Press material against wheel with correct amount of pressure.
11. Turn "off" power after using.
12. Clean buffer and area with a brush or an air-gun.

4.5.5. BUFFER (Cont'd)

SPACE REQUIREMENTS FOR BUFFER



SAFETY EXAM

( ) 1. When buffing, hold your work: a) on top of wheel; b) below center of wheel; c) above center of wheel; d) on bottom of wheel.

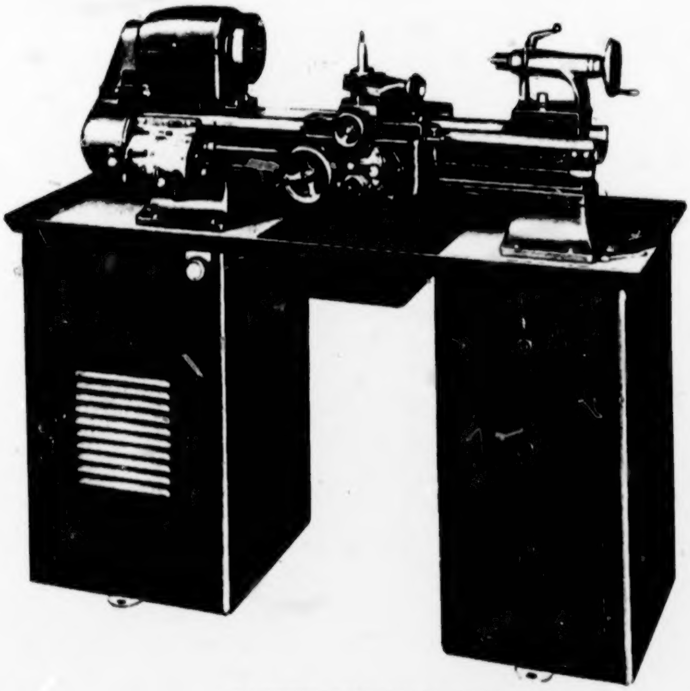
( ) 2. Permission to buff small pieces must be obtained from: a) foreman; b) teacher; c) principal; d) counselor.

( ) 3. Goggles or a face shield must be worn when using the buffer because it will: a) magnify your work; b) remove glare; c) help avoid distraction; d) protect your eyes from flying particles.

( ) 4. When using the buffer, you should point the sharp edges of your work: a) upward; b) sideways; c) horizontal; d) downward.

Answers: 1. b; 2. b; 3. d; 4. d.

4.5.6. LATHE (METALWORKING)



SAFETY INSTRUCTIONS

General Turning Instructions

1. Obtain permission from your teacher before using lathe.
2. Roll sleeves above elbows and remove or fasten any loose clothing.
3. Make all adjustments only when machine is at a dead stop.
4. Make sure all guards are in place.
5. Be sure that all parts of the carriage will clear any rotating part during full length of cut.
6. Remove chuck key or wrench immediately after using.
7. Set tool on center of work to be turned.
8. Wear face shield or safety glasses.
9. Make sure that no one but you is inside the safety zone.
10. Turn "on" power. Place your hands on the controls or at your sides except when filing or polishing.
11. Keep hands away from chips. Remove chips with brush, pliers, or a piece of wood.
12. Stop the machine before attempting to measure the job.
13. Finish cuts that are close to chuck or against a shoulder by hand feed.
14. Bring lathe to a complete stop before reversing.
15. Remove tool holder and tool post before filing or polishing.
16. Shut "off" power after using lathe. Stand by until machine comes to a complete stop.
17. Clean machine and area.

4.5.6. LATHE (METALWORKING) (Cont'd)

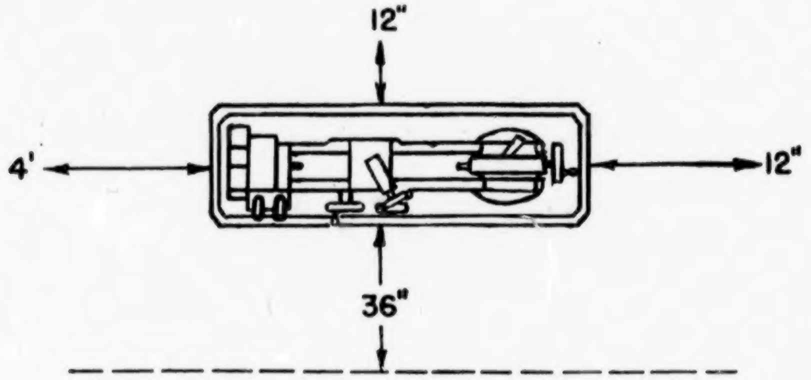
Between-Centers Turning Instructions

1. Use safety dog to drive work.
2. Clamp tailstock securely.
3. Adjust and lubricate the tailstock center.
4. Regulate depth of cut according to size and type of metal.
5. Use tools that are properly ground for the particular job.

Chuck and Faceplate Turning Instructions

1. Place a piece of board under chuck when treading it on or off spindle.
2. Secure work firmly in chuck.
3. Remove chuck key or wrench immediately after using it.
4. Counterbalance work on the faceplate if it is irregular in shape.
5. Turn chuck or faceplate by hand one complete turn to make sure work is clear.
6. Regulate depth of cut according to size and type of metal.
7. Stand to one side of revolving faceplate.
8. Stop power feed before tool reaches jaws of chuck.

SPACE REQUIREMENTS FOR LATHE (METAL)



4.5.6. LATHE (METALWORKING) (Cont'd)

SAFETY EXAM

( ) 1. All measurements should be taken when the lathe is at a dead stop so as to: a) avoid damaging measuring tool; b) keep chuck tight; c) make faster measurements; d) prevent measuring instruments from getting caught and flying out.

( ) 2. When the chuck or faceplate has been removed from the lathe, you should place it: a) on the carriage; b) in the chip pan; c) in such a manner that it will not roll and fall onto the floor; d) on the ways.

( ) 3. Before cleaning your work with a rag, be sure the lathe is: a) at a dead stop; b) turning slowly; c) rotating in reverse; d) revolving at full speed.

Answers: 1. d; 2. c; 3. a.

4.5.7. POWER HACK SAW

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using power hack saw.
2. Mount work only when the power is turned "off" and the machine is at a dead stop.
3. Never attempt to saw short pieces of stock unless you have another piece of the same diameter in the opposite side of the jaws. Pieces smaller than 1/4 inch should be cut manually.
4. Measure correctly. Double check after tightening the vise.
5. Turn "on" power. Stand to one side of saw frame when you turn on the power.
6. Do not bend over saw while it is in operation.
7. Keep hands away from blade and line of travel of moving parts.
8. When cutting long stock, be sure to support protruding end. Provide protection against someone walking into the protruding stock.
9. Turn "off" power after using the power hack saw and stand by until the machine has stopped.
10. Clean machine and area with a brush.

SAFETY EXAM

( ) 1. When using the power hack saw, it is unsafe to cut: a) flat stock; b) cylindrical stock; c) pieces smaller than 1/4 inch; d) long stock.

( ) 2. Work should be mounted when: a) the machine is at a dead stop; b) the power is turned on; c) the blade is moving at a slow rate of speed; d) the teacher is helping you.

Answers: 1. c, 2. a.

4.5.8. SHAPER (METALWORKING)

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using shaper.
2. Make adjustments or setup only when machine is at a dead stop.
3. Use soft hammer or mallet to set work on the parallels.
4. Secure work firmly in the machine.
5. Select proper tool for the job.
6. Set machine for proper depth of cut.
7. Be sure that ram and head will clear your work and any holding device.
8. Protect your eyes with a face shield or safety glasses.
9. Make sure no one but you is inside the safety zone.
10. Check to see that lever is in neutral position before starting the motor.
11. Turn "on" power. Stand to one side of machine.
12. Keep your hands away from cutting tool and line of travel of all moving parts.
13. Turn "off" power after using shaper, and stand by until the machine has stopped.
14. Clean machine and area with a brush.

SAFETY EXAM

( ) 1. Before starting the shaper, make sure the ram and head will clear the: a) ram clamp; b) starting lever; c) operator; d) work and holding device.

( ) 2. When operating the shaper, you should: a) wear a face shield or safety glasses; b) increase the cutting speed; c) oil the machine; d) sweep the chips from the floor immediately.

( ) 3. When the shaper is in motion, you should: a) lean on the ram; b) sit on the ram; c) raise the tool holder on each back stroke; d) keep your hands away from the work.

Answers: 1. d, 2. a, 3. d.

4.5.9. PLANER (METALWORKING)

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using planer.
2. Make adjustments or setup only when machine is a dead stop.
3. Secure work firmly in the machine.
4. Select proper tool for the job.
5. Set machine for proper depth of cut.
6. Make sure that work clears cross rail and sides of machine.
7. See that stops are set for controlling the movement of table.
8. Protect your eyes with a face shield or safety glasses.
9. Check to see that lever is in neutral position before starting the motor.
10. Make sure no one but you is inside the safety zone.
11. Turn "on" power. Keep hands away from cutting tool and line of travel of moving parts of machine.
12. Turn "off" power after using planer and stand by until the machine has come to a complete stop.
13. Clean machine and area with a brush.

SAFETY EXAM

( ) 1. When setting up your work on the planer, be certain: a) there are no chips on the table; b) the platen travels at least 6 inches; c) the machine is in gear; d) your work is securely fastened on the table.

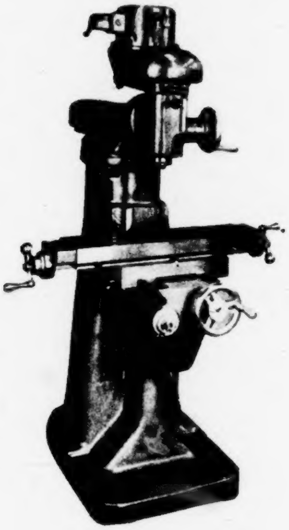
( ) 2. Before starting the planer, make usre the work will clear the: a) starting lever; b) operator; c) table; d) cross rails and sides of the machine.

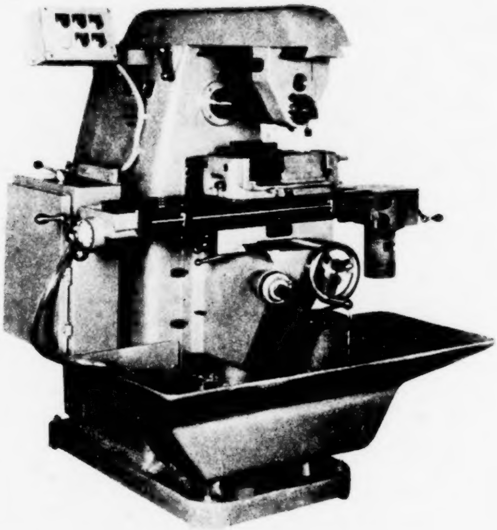
( ) 3. Use a file to remove sharp burrs and corners from your work to: a) avoid tearing your clothes; b) prevent your fingers from being cut; c) speed up production; d) prevent your work from being scratched.

( ) 4. When the planer is in motion, you should: a) sit nearby and watch; b) lean on the cross rail; c) keep your hands away from the work; d) stop the table each time it returns.

Answers: 1. d, 2. d, 3. b, 4. c.

4.5.10. MILLING MACHINE



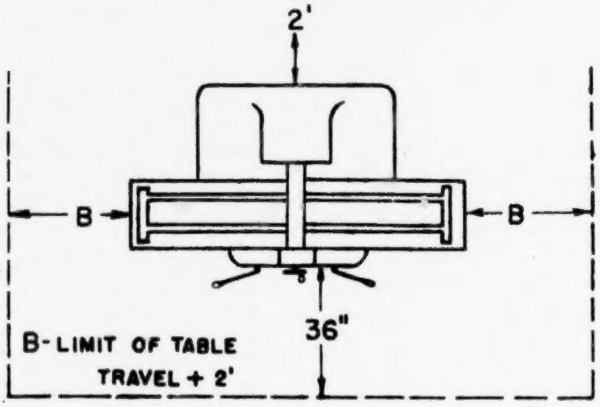


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using milling machine.
2. Make all adjustments or setups only when the machine is at a dead stop.
3. Use correct fitting wrenches on machine parts.
4. Handle all cutters carefully.
5. Select proper cutter; be sure it is sharp.
6. Use only a soft hammer or mallet to seat work against the parallels or bottom of vise.
7. Be sure that the job is securely fastened.
8. Make certain that the work, the milling machine table, and any holding device will clear arbor and support during cut.
9. Set machine for proper depth of cut.
10. Select correct feed.
11. Disengage handles when automatic feed is to be used or when table is to be locked.
12. Make sure no one but you is in safety zone.
13. Stand to one side of machine.
14. Turn "on" power. Be sure that cutter is turning in proper direction.
15. Feed against or opposite to direction of rotation of cutter.
16. Use a brush to remove chips from work when machine is at rest.
17. Turn "off" power after using and stand by until machine comes to a complete stop.
18. Release all automatic feeds.
19. Clean machine and area with a brush.

4.5.10. MILLING MACHINE (Cont'd)

SPACE REQUIREMENTS FOR MILLING MACHINE



SAFETY EXAM

( ) 1. Check all attachments and clamps on the milling machine for tightness before: a) turning on the power; b) oiling the machine; c) changing the spindle speeds; d) turning off the automatic feed.

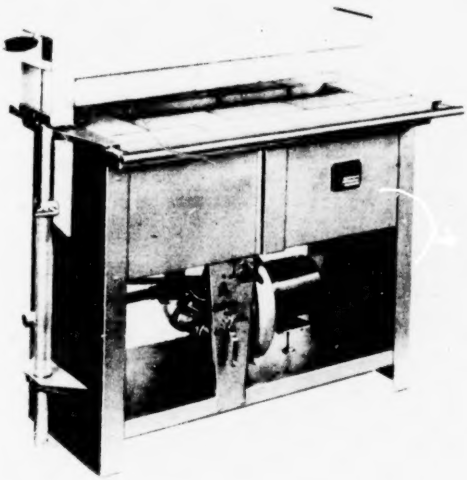
( ) 2. When milling machine cutter is revolving: a) clean the table; b) oil the gears; c) clean the arbor with a cloth; d) stand to one side of machine.

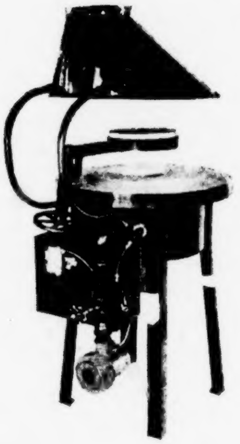
( ) 3. Striking a mill cutter with a steel hammer may: a) cause pieces of steel to fly; b) break the cutter; c) damage the arbor; d) damage the hammer.

( ) 4. When you have finished using the milling machine, you should: a) speed up all clutches and feeds; b) seat work against the parallels; c) select proper cutter; d) release all automatic feeds.

Answers: 1. a; 2. d; 3. a; 4. d.

4.5.11. FORGE



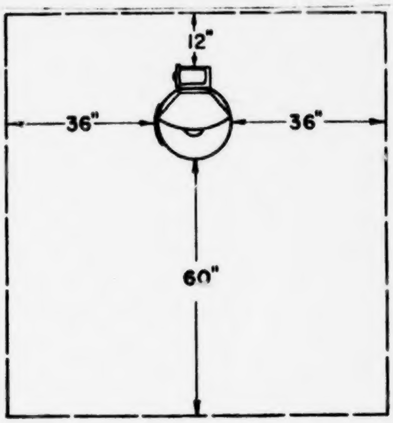


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before lighting gas forge.
2. Clear area of all flammable material.
3. Keep area well ventilated.
4. Wear face shield or safety glasses.
5. Make sure that no one but you is in the safety zone.
6. Light forge by following this procedure:
   a. Run air for two minutes in unlighted forge.
   b. Turn air off.
   c. Place a lighted piece of paper in the forge.
   d. Create draft by turning on air slowly.
   e. Turn on the gas slowly.
   f. Adjust flame so that all fire is confined within forge.
7. Handle long and heavy pieces of steel with care.
8. Use tongs or pliers to handle hot metal.
9. Be careful when carrying hot metal. Warn all students who may be in the way. Do not leave hot metal unattended.
10. Use only tools with safe handles and properly dressed heads.
11. Keep anvil face clear of scraps and flakes of metal.
12. Hammer metal being forged only. Striking hammer on face of anvil may cause chips of steel to fly.
13. Stand so that your face is protected when quenching metal.
14. Shut off gas first and then air when you have finished using the forge
15. Quench hot tongs before putting them away.
16. Clean up working area.

4.5.11. FORGE (Cont'd)

SPACE REQUIREMENTS FOR FORGE



SAFETY EXAM

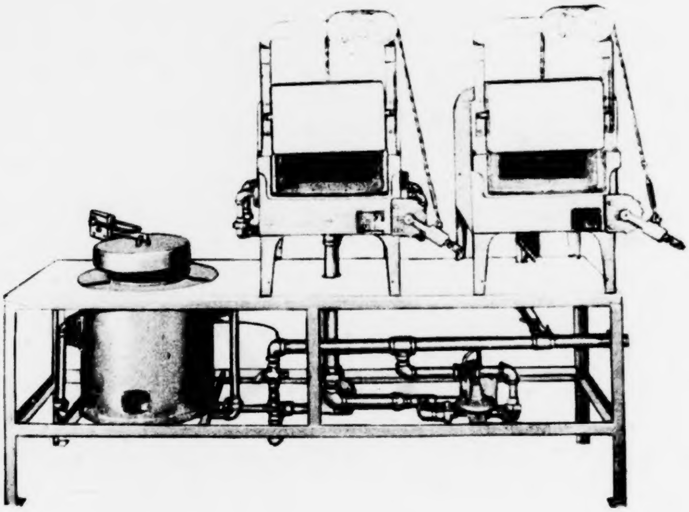
( ) 1. You must wear a face shield or a safety glass when using the forge or hammering on metal because it: a) magnifies the work; b) protects your eyes from bright light; c) protects your eyes from flying particles; d) makes you look nice.

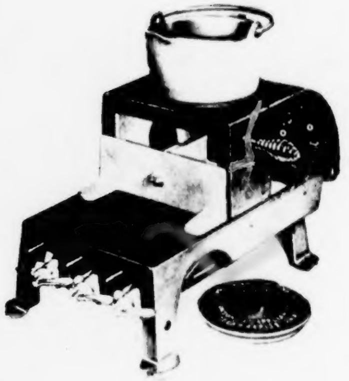
( ) 2. When lighting the gas forge, you should first: a) turn on the gas; b) run air through the forge; c) place a lighted piece of paper in the forge; d) close all vents.

( ) 3. You must cool tongs before placing them on the tool rack to prevent: a) burning someone; b) heating the tool rack; c) warping the tongs; d) disorganizing the tool rack.

Answers: 1. c; 2. b; 3. a.

4.5.12. FURNACE



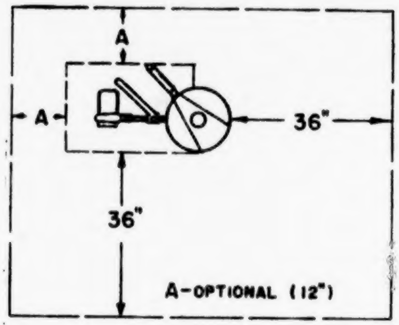


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before lighting furnace for soldering.
2. See that area is properly ventilated.
3. Select correct flux for soldering job you are planning to do.
4. Light furnace by following this procedure:
    a. Stand to one side of furnace.
    b. Turn on the gas slowly. Strike friction lighter to light gas if furnace does not have pilot light.
    c. Adjust flame so that the fire is confined within the furnace.
5. Place soldering copper on the prescribed rest when not in use.
6. Determine heated readiness of a soldering copper by testing it with a piece of solder. Use care in handling heated soldering copper.
7. Stand so that you will be protected from any fumes while tinning a copper or when soldering.
8. Use care when wiping off excess solder.
9. Wipe up immediately any spilled flux.
10. Shut "off" gas when you have finished using soldering furnace.
11. Clean area when you have completed your soldering.

4.5.12. FURNACE (Cont'd)

SPACE REQUIREMENTS FOR FURNACE



SAFETY EXAM

( ) 1. Before lighting the furnace, make sure that: a) all windows are closed; b) there is a spare soldering copper; c) all lights are turned off; d) the area is properly ventilated.

( ) 2. In passing a soldering copper to another person, you should: a) hand it to him by the headed end; b) grasp it by the middle so he can take hold of the handle; c) place it on a rest or in the furnace so he can pick it up; d) wrap a piece of rag or paper around it so neither of you will be burned

( ) 3. Always pick up soldering copper: a) by its handle; b) by its shank; c) when it is hot; d) when it is cold.

( ) 4. To determine whether a soldering copper is hot enough to use, you should: a) dip it in water; b) look at the flame; c) test it with your fingers; d) test it with a piece of solder.

Answers: 1. d; 2. c; 3. a; 4. d.

4.5.13. WELDER (ELECTRIC)

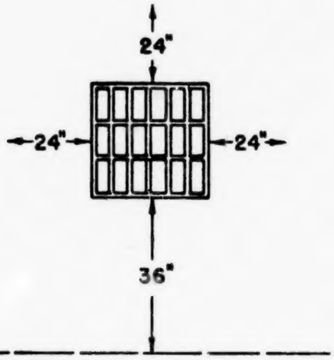
IDEALARC
TM - 500 / 800

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using welding equipment.
2. Wear a helmet with proper observation window, treated gauntlet gloves and treated leather apron. All assistants and observers must also wear the equipment.
3. Keep sleeves and pants cuffs rolled down. Wear leather jacket.
4. Do electric welding only in a correctly constructed booth or room or behind proper screens.
5. Be sure there is ample ventilation.
6. Keep all flammable material away from working area.
7. See that floor area is clear of all obstructions.
8. Report to your teacher, at once, if electrode holder, holder cable connection, cable or cable terminals at the welding machine, ground clamp, lugs, or cable get hot.
9. Hang up electrode holder and turn off welder when work is being changed or when work is completed.
10. Clean area.

4.5.13. **WELDER (ELECTRIC)** (Cont'd)

SPACE REQUIREMENTS FOR WELDER (ELECTRIC)



SAFETY EXAM

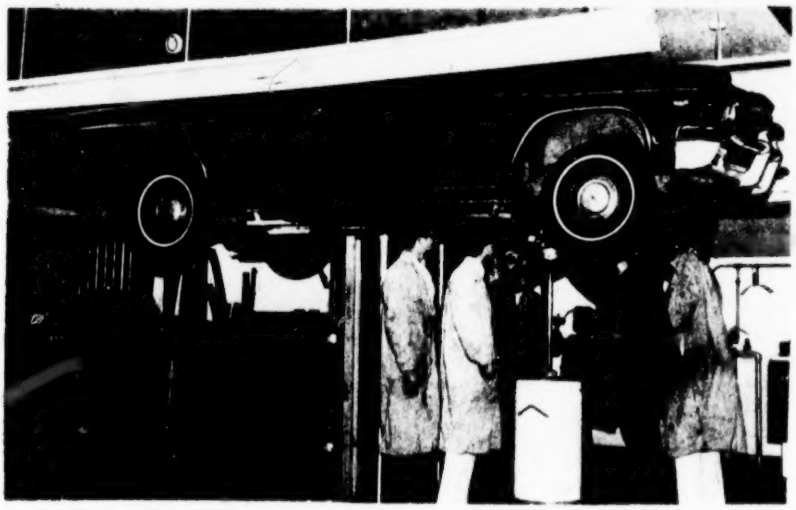
( ) 1. If observation window in your welding helmet is cracked, it will: a) allow dust to pass through it; b) obstruct your view; c) rattle every time you move your head; d) transmit infrared and ultraviolet rays.

( ) 2. If a cable or the electrode holder overheats, you should: a) turn the voltage down; b) notify your teacher; c) stop welding and wait until it cools; d) change the electrode holder.

Answers: 1. d; 2. b.

4.6. POWER MECHANICS TECHNOLOGY

4.6.1. CAR LIFTS, HOISTS, AND CRANES

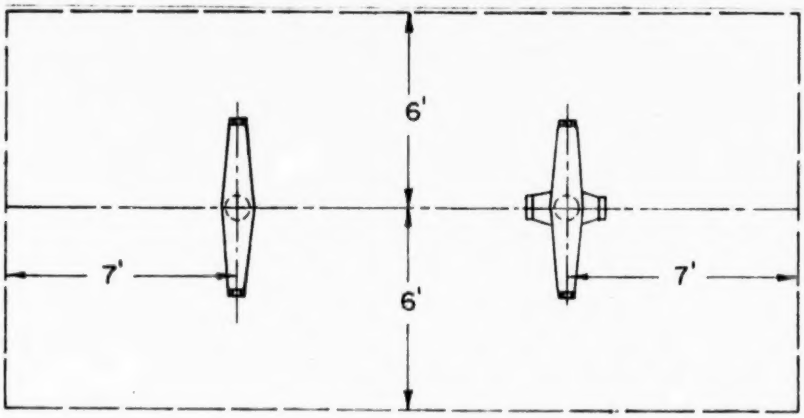


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using a car lift, hoist, or crane.
2. Ask your teacher to inspect blocking of car before it is raised.
3. Place crane or hoist directly over the object to be lifted.
4. Inspect condition of chain, cable, or rope to be used in lifting.
5. Double-check fastening of chain, cable, or rope to the object to make sure it is secure before lifting with crane or hoist. Balance object before lifting.
6. Make sure all persons and obstructions are clear before raising or lowering an engine or car.
7. Support car with stands or blocks before doing work under the car or removing wheels.
8. Obtain permission from your teacher before getting under a raised car.
9. Wear face shield or safety glasses when working under a car.

4.6.1. CAR LIFTS, HOISTS, AND CRANES (Cont'd)

SPACE REQUIREMENTS FOR CAR LIFTS, HOISTS, AND CRANES



SAFETY EXAM

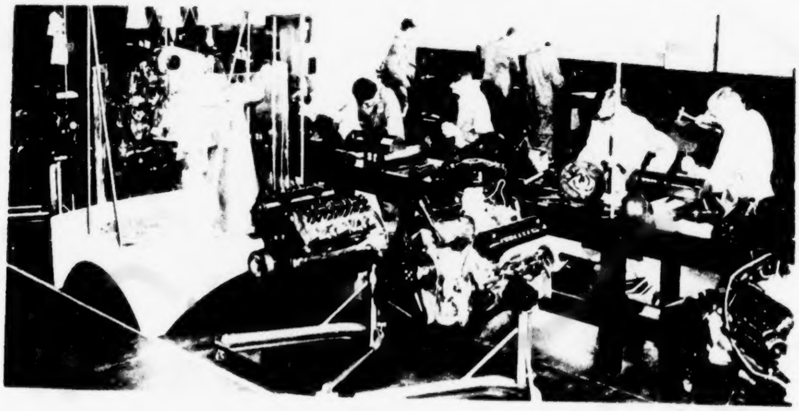
( ) 1. Before working under a car that has been raised, or removing its wheels, make sure the: a) hand brake is applied; b) car is adequately supported; c) transmission is in park; d) engine is not running.

( ) 2. Place crane or hoist directly over the object to be lifted so: a) weight may be raised faster; b) there will be less wear and tear on the chain or rope; c) less room will be needed; d) crane, hoist, or object will not tip over.

( ) 3. After you have raised a car by crane or hoist, sufficient support must be placed under the car to be sure that: a) the car will not roll away; b) there will be less strain on the springs and shock absorbers; c) the hoist will last longer; d) the car will remain in the raised position.

Answers: 1. b; 2. d; 3. d.

4.6.2. ENGINE

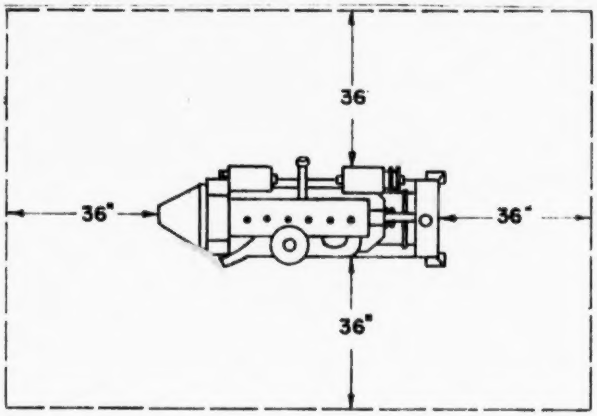


SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before starting an engine whether engine is on a test stand or in a car.
2. Check fuel line for possible leaks.
3. Vent exhaust to the outside of building and provide adequate ventilation whenever running an engine.
4. Keep head and hands away from revolving fan.
5. Be sure to block wheels of any mobile engine test stand you may use.
6. Use, when neccessary, a carbon dioxide (CO_2) extinguisher for flammable liquid fires.

4.6.2. ENGINE (Cont'd)

SPACE REQUIREMENTS FOR ENGINE STAND



SAFETY EXAM

( ) 1. Vent exhaust to the outside of building and provide adequate ventilation whenever running an engine because: a) carburetor needs this air to produce a proper mixture; b) noise pollution will be reduced; c) back pressure on the manifold will be reduced; d) it will prevent the release of exhaust gas in the shop.

( ) 2. When working on an engine that is running, you should: a) keep the car in gear; b) make sure gas tank is full; c) keep head and hands away from revolving fan; d) plug the exhaust pipe.

Answers: 1. d; 2. c.

4.6.3. STORAGE BATTERY CHARGER

SAFETY INSTRUCTIONS

Servicing

1. Obtain permission from your teacher before servicing or charging a storage battery.
2. Use proper instruments for testing a storage battery.
3. Avoid overfilling a battery, especially if it is to be charged.
4. Use water and baking soda to clean off the top of a battery.
5. Remove and transport a battery with a battery lifter.
6. Handle battery or acid with care. Immediately wash any part of your body or clothing that comes in contact with acid.
7. Wash hands immediately after handling a battery.

Charging

1. Wear goggles when using a charger.
2. Provide ample ventilation when using a charger.
3. Remove cell covers before charging a battery (unless the covers have other instructions on them).
4. Keep open flames and sparks away from a battery being charged.

SAFETY EXAM

( ) 1. Test a storage battery with: a) a pair of pliers; b) a screw driver; c) a piece of wire; d) an analyzer or tester.

( ) 2. A good neutralizer for cleaning off the top of a storage battery is water and: a) borax; b) lye; c) soap; d) baking soda.

( ) 3. Storage batteries should be charged in a well-ventilated room because the gas given off during charging is: a) corrosive; b) explosive; c) carbon dioxide; d) not dangerous.

Answers: 1. d; 2. d; 3. b.

4.6.4. WELDER (OXYGEN - ACETYLENE)

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using welding equipment.
2. Fasten cylinders with a chain or other suitable device as a protection against falling or rolling. Close valves and replace protective covers before moving cylinders.
3. Keep welding equipment free of oil and grease. Use only clean rags for wiping off welding equipment.
4. Inspect hose before using.
5. Make sure that hose is properly connected and that all connections are tight.
6. Report any leaking of cylinders or connections to teacher immediately.
7. Make sure you have proper ventilation.
8. Keep all flammable material away from working area.
9. Wear welding goggles. All assistants and observers must also wear welding goggles.
10. Release regulator pressure screw. Open cylinder vables gradually.
11. Open acetylene cylinder valve one and one-fourth turns or less. Keep wrench in place so that valve may be shut off quickly, if necessary.
12. Keep acetylene pressure in the hose below 15 pounds per square inch.
13. Use a friction torch lighter to ignite torch.
14. Close acetylene valve first if torch backfires.
15. Make sure that lighted torch always points away from yourself and other students.
16. Keep sparks and flame away from cylinders.
17. Close cylinder valves when you have finished your welding job.
18. Quench section of metal that has been welded or mark with chalk or soapstone the word "hot" on the metal if it is necessary for you to leave your work.
19. Clean area and store hose rolled neatly on proper rack.

SAFETY EXAM

( ) 1. Make sure welding equipment is: a) lubricated with oil; b) kept free of oil and grease; c) tightened with a plier; d) cleaned with kerosene.

( ) 2. Welding goggles are worn because they: a) magnify the work; b) help protect your eyees from dust; c) help you to avoid distractions from the sides; d) protect your eyes against heat, rays, and sparks.

( ) 3. When lighting a welding torch, use a: a) match; b) piece of lighted rag soaked in kerosene; c) friction torch lighter; d) match.

Answers: 1. b; 2. d; 3. c.

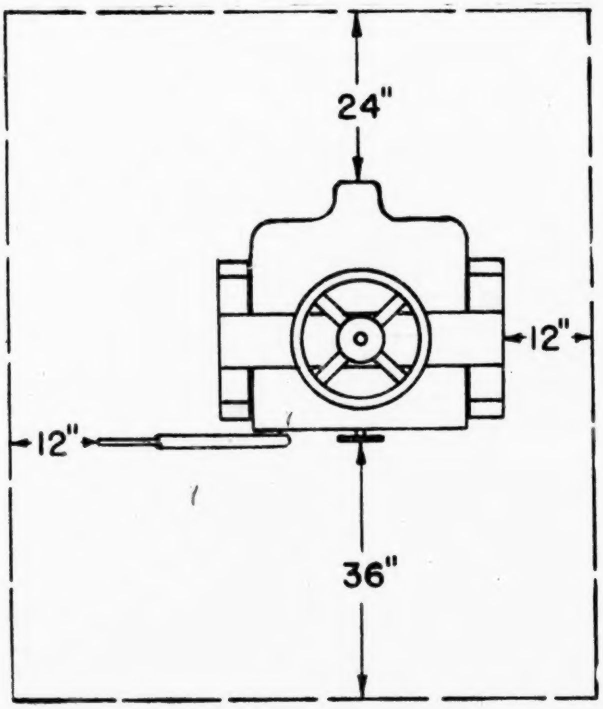
4.7. GRAPHIC ARTS TECHNOLOGY

4.7.1. MOTORIZED PAPER CUTTER

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using the paper cutter.
2. Make sure that no one but you is inside the safety zone.
3. Be certain the handle controlling blade is in its proper position and the safety lock is engaged before setting back gauge.
4. Keep hands clear of blade at all times.
5. Limit amount of stock to be cut at any one time.
6. Use care when jogging stock against back guage and side so as to avoid being cut by the paper cutter.
7. Keep both hands on the handle controlling blade during cut and return to proper position.
8. Be sure handle controlling blade is returned to its proper position before reaching for cut stock.
9. Check to see that safety lock engages after using cutter.

SPACE REQUIREMENTS FOR MOTORIZED PAPER CUTTER



4.7.1. MOTORIZED PAPER CUTTER (Cont'd)

SAFETY EXAM

( ) 1. Before adjusting the paper cutter, be sure that the handle controlling the blade: a) is locked in its proper position; b) is in a downward position; c) and the clamp is down; d) and the knife is down.

( ) 2. You should reach for the cut stock when: a) blade is on the upward stroke; b) blade is on the downward stroke; c) handle controlling blade is returned to its proper position; d) clamp is down.

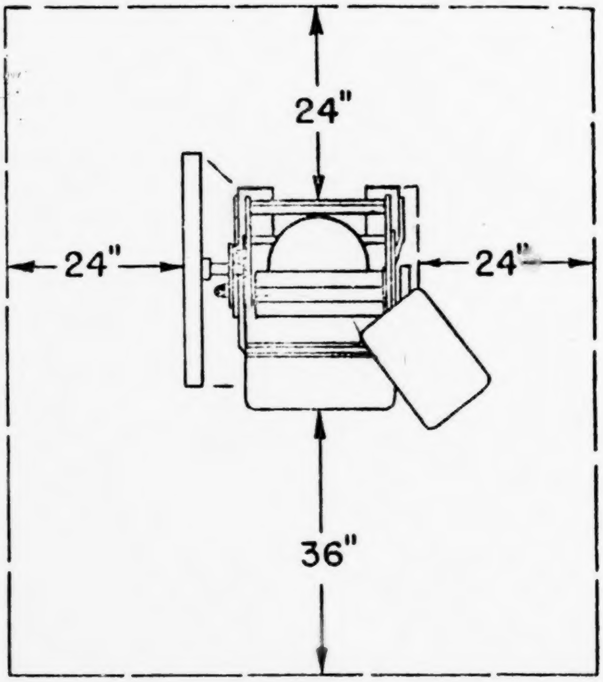
Answers: 1. a; 2. c.

4.7.2. PLATEN PRESS

SAFETY INSTRUCTIONS

1. Obtain permission from your teacher before using the press.
2. Oil press only when the power is off and the machine is at a "dead" stop.
3. Be sure form is locked securely in bed.
4. Apply ink to disc only when press is at a "dead" stop.
5. Make sure that no one but you is in the safety zone.
6. Turn "on" power.
7. Gauge speed of press according to your ability to feed.
8. Use throw-off lever and wait for platen to open before adjusting misfed stock.
9. Stop press before attempting to remove paper picked up by the ink rollers.
10. Stop press before retrieving stock that has fallen between the platen and delivery board or under the press.
11. Turn "off" power after using press and stand by until the machine has come to a complete stop.
12. Check with your teacher to find out whether you should clean ink rollers and disc.

SPACE REQUIREMENTS FOR PLATEN PRESS



4.7.2. PLATEN PRESS (Cont'd)

SAFETY EXAM

( ) 1. Press should be oiled only when: a) the power is off and the machine is at a dead stop; b) the machine is running; c) it breaks down; d) it becomes too noisy.

( ) 2. The disc is to be inked when the press is: a) running slowly; b) coasting; c) at a dead stop; d) running at full speed.

( ) 3. Gauge the speed of the press according to: a) the amount of work to be done; b) how fast your friend can feed it; c) how much time you have left; d) your ability to feed.

Answers: 1. a; 2. c; 3. d.

4.8. ELECTRICITY/ELECTRONICS TECHNOLOGY

4.8.1. CIRCUITS

SAFETY INSTRUCTIONS

1. Consider all wires and other conductors in a circuit live until proved dead by a safe method of testing.
2. Use test lamp or suitable meter for testing a circuit.
3. Turn "on" switch only when you know what it operates.
4. Turn "off" power before replacing a fuse.
5. Locate and correct fault that caused circuit breaker to open or fuse to blow before turning on power.
6. Be sure circuit is protected against overload by a fuse or circuit breaker of correct current-carrying capacity.
7. Make changes in the wiring of a circuit only when power is turned off.
8. Select and use wire of correct current carrying capacity.

SAFETY EXAM

( ) 1. All electrical circuits must be protected from overload damage through the use of: a) fuses or circuit breakers; b) copper wires; c) solenoid; d) a junction box.

( ) 2. When testing for live wires, a suitable device to use would be a: a) piece of wood; b) copper wire; c) screwdriver; d) test lamp.

( ) 3. Until definitely known, all wires in a circuit must be considered to be: a) live; b) dead; c) safe; d) harmless.

Answers: 1. a; 2. d; 3. a.

4.8.2. ELECTRONIC DEVICES

SAFETY INSTRUCTIONS

1. Keep chassis of an AC-DC radio clear of ground wires and other grounded conductors.
2. Avoid coming in contact with grounded objects when making adjustments on an AC-DC radio connected to a power source.
3. Be sure capacitor is discharged before touching its terminals or connections.
4. Disconnect electric cord from power before touching anything behind transmitter panel.
5. Remove headphones while working on a transmitter or receiver.
6. Keep one hand behind your back or in your pocket when testing high voltage circuits.
7. Be sure power is "off" before using an ohmmeter; use highest range available in using a voltmeter or ammeter, then reduce the range when approximate reading is determined.
8. Make certain chassis, cabinet, and cable shields of a transmitter or receiver are grounded.
9. Wear gloves and a face shield when handling a cathode-ray tube.

SAFETY EXAM

( ) 1. When repairing a transmitter or receiver, the line should always be: a) plugged in; b) unplugged; c) raised off the ground; d) wrapped around a metal post.

( ) 2. Chassis, cabinet, and cable shields of a transmitter or receiver must be: a) taped; b) bolted; c) grounded; d) tied together.

Answers: 1. b, 2. c.

4.8.3. ELECTRICAL EQUIPMENT

SAFETY INSTRUCTIONS

1. Disconnect portable, electrically powered equipment from power source before servicing or repairing the equipment.
2. Examine electric cord for possible defects and correct any defects before using.
3. Properly ground electrically powered equipment before operating it.
4. Connect to power source and turn on your own equipment.

SAFETY EXAM

) 1. Make certain that the frame or housing of electrically operated equipment is: a) bolted; b) painted red; c) grounded; d) not tarnished.

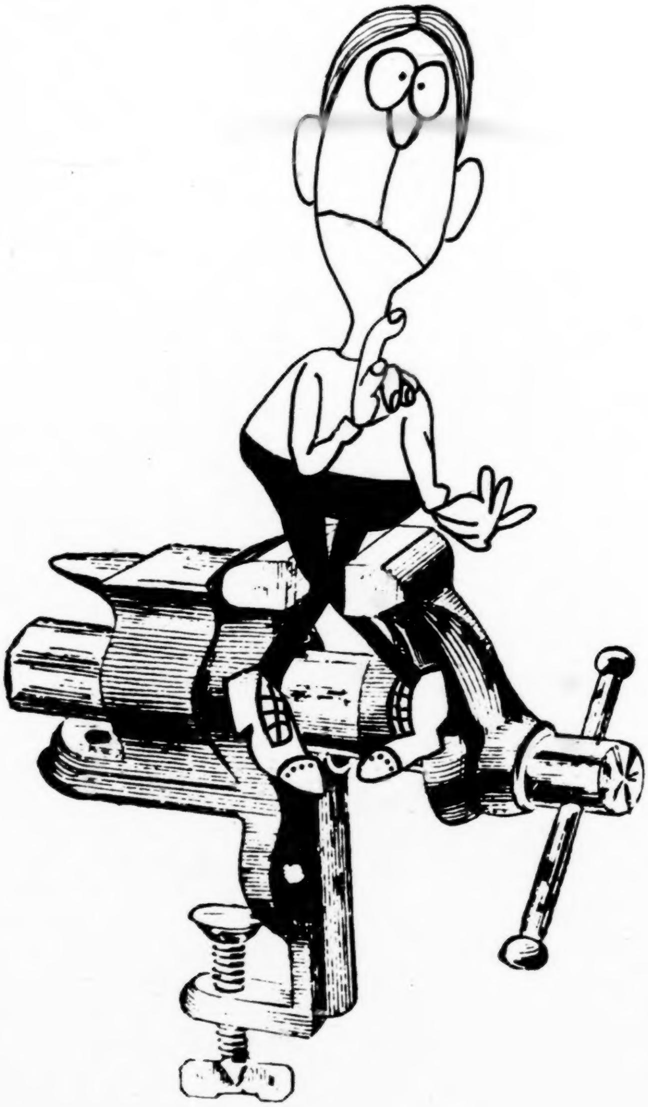
( ) 2. Before servicing or repairing electrical equipment, be sure that: a) armature has been checked; b) electric cord has been disconnected from power source; c) fuse has been changed; d) switch is working properly.

Answers: 1. c, 2. b.

4.9. DESIGN/DRAFTING TECHNOLOGY

(Note: This section is
to be developed
at a later date.)

BIBLIOGRAPHY
5.0



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APPENDIX
6.0

6.1. POLICIES, REGULATIONS AND ACTS

EMERGENCY CARE FOR SICK OR INJURED STUDENTS

POLICY

The school is responsible for providing immediate and temporary care for students who become ill or are injured on school premises. The administering of first aid is the responsibility of the principal or the persons designated by him.

DE Code Policies & Regulations 1710-14

EMERGENCY CARE FOR SICK OR INJURED STUDENTS

REGULATIONS

1. The principal and/or his designees should be well trained in first aid and should be available at all times to render this help when needed.

2. Parents should be notified immediately of all cases of illness or injury occurring on school premises. If the sick or injured child is to be sent home or elsewhere, his parents are to arrange for his transportation. If they cannot be contacted immediately, the principal may take such action necessary for the best interest of the child.

3. Under no circumstances may school personnel diagnose illness, prescribe or administer medication of any sort to pupils.

4. If an accident occurs on school property, it should be reported on department's accident report form (Form 411).

5. FIRST AID INSTRUCTIONS IN ACCIDENTS AND ILLNESSES OCCURRING IN SCHOOL are outlined in the department's health manual.

DE Code Policies & Regulations 1710-14.1

SAFETY POLICY
PRACTICAL ARTS AND VOCATIONAL-TECHNICAL EDUCATION

POLICY

Teachers of practical arts and vocational-technical subjects shall comply with all prescribed safety standards and regulations. All students enrolled in these subjects shall abide by the standards and regulations established for their own safety and that of other students.

DE Code Policies & Regulations 2130.2.1

SAFETY REGULATIONS
PRACTICAL ARTS AND VOCATIONAL-TECHNICAL EDUCATION

REGULATIONS

1. The provisions prescribed in the latest edition of safety standards, in the form of manuals or circulars, shall be complied with in all practical arts subjects and activities.

2. The provisions prescribed in the latest edition of safety standards, in the form of manuals or circulars, shall be complied with in all vocational-technical subjects and activities.

DE Code Policies & Regulations 2130.2.2

STUDENT SAFETY

POLICY

Attention of the Department of Education shall be given to the personal safety of each student while on campus or engaged in school-connected activities off-campus. Such attention shall include instruction in safety habits and attitudes; proper maintenance of buildings, grounds, and equipment; establishment and enforcement of proper rules of conduct at each school; and provision of services to safeguard students from the deviant behavior of those who fail to conform to standards of conduct compatible with the best interests of all.

DE Code Policies & Regulations 4210

STUDENT SAFETY

REGULATIONS

1. Instruction in safety habits and attitudes shall be assumed by all school staff members.

2. The principal shall inspect or cause to be inspected all buildings, grounds, and equipment to which students have access, recommending proper measures for the maintenance of adequate safety.

3. Involving the students, teachers, and parents to the extent which they may contribute their ideas and support, the principal shall establish necessary rules of conduct to govern behavior and safety on the campus and at school-related activities off-campus.

4. The principal shall deploy his staff members in such a manner that their supervisory responsibilities shall include the personal safety of all students.

5. The principal shall seek additional resources, outside his immediate staff, to prevent physical harm to the students under his supervision.

6. District Superintendents shall take into consideration the behavioral characteristics and special needs of students in their allocations of personnel to schools.

DE Code Policies & Regulations 4210.1

STUDENT ACCIDENT INSURANCE

REGULATIONS

1. Student accident insurance may be carried with the company that has been approved by the Department of Education to offer low cost accident insurance for students. The Office of Business Services will make a determination of company proposals and submit them to the Board of Education when an existing agreement expires or is terminated.

2. The school is not to collect premiums. This responsibility must be accepted by the insurance company. It is permissible for the school to allow the company to have an agent at the school on specified days to receive premiums from the students.

3. The school is to inform parents at the beginning of the school year of the availability of student accident insurance, provide them with application forms and other information about the policy offered, and assist parents with the preparation of claims when necessary. It shall be made clear to parents that this is a voluntary plan and enrollment is entirely the choice of the parent.

4. Students participating in competitive athletics must be covered by accident insurance. Since some athletes are covered by policies carried by the family or by the company where the parent works, the school should have a check made to determine if such policies provide coverage for accidents while away from home on inter-island trips.

5. The term competitive athletics shall be defined as any scheduled athletic contest outside the physical education program conducted during the regular school day. This includes an intramural, extramural and interscholastic competition.

ACT 107

TO REQUIRE GOVERNMENT AGENCIES TO PROVIDE SAFETY EQUIPMENT TO PUBLIC EMPLOYEES WHEN REQUIRED IN THE LINE OF DUTY, BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII;

SECTION 1. Chapter 5 of the Revised Laws of Hawaii 1955, as amended, is hereby further amended by adding thereto a new section, to be appropriately numbered, and to read as follows:

"Sec. ____. Safety Equipment. Each department or agency of the State and its political subdivisions shall furnish its employees with safety equipment when such equipment is required in connection with the employees' official duties by the codes and rules and regulations of the Division of Industrial Safety of the Labor Department. The cost of such equipment shall be a proper charge against the funds of the department or agency furnishing the equipment. Except in the case of gross negligence on the part of the employee in losing or damaging such equipment, damaged safety equipment and equipment worn out through wear and tear shall be replaced by the department or agency."

SECTION 2. This Act shall take effect upon its approval.

6.2. FORMS AND CHECKLISTS

6.2.1.

Form No. 411
Rev. 9/71, TAC 71-3518

STATE OF HAWAII
DEPARTMENT OF EDUCATION

ACCIDENT REPORT FORM

1. NAME ____ (Last) (First) (Initials)
2. ADDRESS ____
3. GRADE ____ 4. AGE ____ 5. MALE ____ 6. FEMALE ____
7. STUDENT ____ 8. PARENT ____ 9. ____

10. SCHOOL ____
11. DISTRICT ____
12. COMPLEX ____
13. DATE OF ACCIDENT ____ (Month) (Day) (Year)

14. LOCATION OF ACCIDENT

ATHLETIC FIELD ____
AUDITORIUM ____
BATHROOM ____
CAFETERIA ____
CLASSROOM ____
GYMNASIUM ____
HALLWAY ____
HOME ECON ROOM ____
LABORATORY ____
LOCKER AREA ____

PARKING LOT ____
PLAYGROUND ____
SCHOOL GROUND ____
SWIMMING POOL ____
SHOP ____
SHOWER ____
STAIRS ____
TO/FROM SCHOOL ____
WASHROOM ____
____

15. ACTIVITY INVOLVED

ATHLETICS-INTRA ____
ATHLETICS-INTER ____
ATHLETICS-P. E. ____
ATHLETICS-REC. ____
CLASS EXPERIMENT ____
CLASS PROJECT ____
HORSEPLAY ____
____

baseball ____
basketball ____
dodgeball ____
football ____
soccer ____
track & field ____
volleyball ____
____

16. PERIOD OF THE DAY

BEFORE SCHOOL ____
MORNING HOURS ____
MORNING RECESS ____

LUNCH/FREE TIME ____
AFTERNOON HOURS ____
AFTER SCHOOL ____

17. APPARENT NATURE OF INJURY

ABRASION ____
AMPUTATION ____
ASPHYXIATION ____
BITE ____
BRUISE ____
BUMP ____
BURN ____
CONCUSSION ____
CUT-LACERATION ____
DISLOCATION ____

FRACTURE ____
POISONING ____
PUNCTURE ____
SCALDING ____
SCRATCHES ____
SHOCK (electric) ____
SPLINTER ____
SPRAIN ____
STING ____
____

18. PART OF BODY INJURED

ABDOMEN ____
ANKLE ____
ARM ____
BACK ____
BUTTOCKS ____
CHEST ____
COLLAR-BONE ____
EAR ____
ELBOW ____

EYE ____
FACE ____
FINGER ____
FOOT ____
HAND ____
HEAD ____
KNEE ____
LEG ____
MOUTH ____

NECK ____
NOSE ____
RIBS ____
SCALP ____
STOMACH ____
THROAT ____
TEETH ____
WRIST ____
____

19. REFERRALS & WITNESSES

STAFF RELATED TO ACCIDENT:
Present ____ Absent ____ Did not see ____ No one ____
WITNESSES:
1. Name ____
Address ____
2. Name ____
Address ____

20. IMMEDIATE ACTION TAKEN

FIRST AID ____ BY ____
SENT TO:
School Nurse ____ By ____
Home ____ By ____
Physician ____ Dr. ____
By ____
Hospital ____ Name ____
By ____
NOTIFIED:
Parent ____ Guardian ____ *Friend ____
By ____
How ____
When ____
*Name ____
INSURANCE: Yes ____ No ____ Don't Know ____
Plan/Firm ____

21. NARRATIVE (How? What happened? Why? Unsafe conditions, action, tool, machine, equipment, etc. involved?) ____

22. SUGGESTED PREVENTIVE MEASURES (Your recommendations for preventing future accidents of this type) ____

23. DEGREE OF INJURY (Fill in after return)
NON-DISABLING ____ PERMANENT ____
TEMPORARY DISABILITY ____ DEATH ____
NUMBER OF SCHOOL DAYS LOST ____

24. REPORTED BY (Signature, please)
____
DATE ____

25. PRINCIPAL (Signature, please)
____
DATE ____

WHITE - Retain; CANARY - District; PINK - Attorney General; GOLDENROD - Student Safety, OIS

PLANNING WORKSHEET FOR

IMPROVEMENTS TO ROOM ________

Instructor______________________

Type of Shop____________________

Item No.	Date of Entry	Description of Improvement	Included in Budget (Year)	Proposal Required for Review		Priority			Improvement	
				Yes	No	1	2	3	Date Started	Date Completed

6.2.3.

NATIONAL STANDARD SCHOOL SHOP SAFETY INSPECTION CHECK LIST

Prepared by the Joint Safety Committee of the
AMERICAN VOCATIONAL ASSOCIATION — NATIONAL SAFETY COUNCIL

______________________________ Date ______________

____

INTRODUCTION

A safe environment is an essential part of the school shop safety education program. The safe environment will exist only if hazards are discovered and corrected through *regular* and *frequent* inspections by school personnel—administrators, teachers and students. Safety inspections are to determine if everything is satisfactory.

Inspections may be made at the request of the board of education, the school administration or upon the initiative of the teacher. Some communities have drawn upon the cooperative service of professional safety engineers, inspectors of state labor departments, insurance companies and local safety councils to supplement and confirm inspections by school personnel.

The National Standard School Shop Safety Inspection Check List, recommended by the President's Conference on Industrial Safety is an objective inspection procedure for the school shop.

DIRECTIONS

WHO INSPECTS?

This will depend upon local policies. It is recommended, however, that shop teachers, and students—the student safety engineer and/or student safety committee—participate in making regular inspections. This not only tends to share responsibility but stimulates a broader interest in the maintenance of a safe school shop.

WHEN TO INSPECT?

As a minimum, a safety inspection should be made at the beginning of every school term or semester. More frequent inspections may be advisable.

HOW TO INSPECT?

Inspections should be well planned in advance.

Inspections should be systematic and thorough. No location that may contain a hazard should be overlooked.

Inspection reports should be clear and concise, but with sufficient explanation to make each recommendation for improvement understandable.

FOLLOW-UP

The current report should be compared with previous records to determine progress. The report should be studied in terms of the accident situation so that special attention can be given to those conditions and locations which are accident producers.

Each unsafe condition should be corrected as soon as possible in accordance with accepted local procedures.

A definite policy should be established in regard to taking materials and equipment out of service because of unsafe conditions.

The inspection report can be used to advantage as the subject for staff and class discussion.

CHECKING PROCEDURE

Draw a circle around the appropriate letter, using the following letter scheme:

S — Satisfactory (needs no attention)
A — Acceptable (needs some attention)
U — Unsatisfactory (needs immediate attention)

Recommendations should be made in all cases where a "U" is circled. Space is provided at the end of the form for such comments. Designate the items covered by the recommendations, using the code number applicable (as B-2).

In most categories, space is provided for listing of standards, requirements or regulations which have local application only.

A. GENERAL PHYSICAL CONDITION

1. Machines, benches, and other equipment are arranged so as to conform to good safety practices........................ S A U
2. Condition of stairways............................ S A U
3. Condition of aisles............................... S A U
4. Condition of floors............................... S A U
5. Condition of walls, windows, and ceiling............. S A U
6. Illumination is safe, sufficient, and well placed....... S A U
7. Ventilation is adequate and proper for conditions..... S A U
8. Temperature control .... S A U
9. Fire extinguishers are of proper type, adequately supplied, properly located and maintained.......................... S A U
10. Teacher and pupils know location of and how to use proper type for various fires.. S A U
11. Number and location of exits is adequate and properly identified .... S A U
12. Proper procedures have been formulated for emptying the room of pupils and taking adequate precautions in case of emergencies S A U
13. Lockers are inspected regularly for cleanliness and fire hazards. S A U
14. Locker doors are kept closed........................ S A U
15. Walls are clear of objects that might fall............ S A U
16. Utility lines are properly identified................. S A U
17. Teachers know the procedure in the event of fire including notification of the fire department and the evacuation of the building. S A U
18. Air in shop is free from excessive dust, smoke, etc.... S A U
19. ______________________________ S A U
20. ______________________________ S A U
21. ______________________________ S A U
22. ______________________________ S A U
23. Evaluation for the total rating of A. GENERAL PHYSICAL CONDITION .... S A U

B. HOUSEKEEPING

1. General appearance as to orderliness S A U
2. Adequate and proper storage space for tools and materials. S A U
3. Benches are kept orderly S A U
4. Corners are clean and clear S A U
5. Special tool racks, in orderly condition, and provided at benches and machines S A U
6. Tool, supply, and/or material room is orderly S A U
7. Sufficient scrap boxes are provided S A U
8. Scrap stock is put in scrap boxes promptly S A U
9. Materials are stored in an orderly and safe condition S A U
10. A spring lid metal container is provided for waste and oily rags. S A U
11. All waste materials and oily rags are promptly placed in the containers S A U
12. Containers for oily rags and waste materials are frequently and regularly emptied S A U
13. Dangerous materials are stored in metal cabinets S A U
14. Machines have been color conditioned S A U
15. Safety cans are provided for flammable liquids S A U
16. Bulk storage of dangerous materials is provided outside of the main building S A U
17. A toe-board or railing around a mezzanine used for storage or washing facilities S A U
18. Materials are stored in an orderly and safe condition on this mezzanine S A U
19. Flammable liquids are not used for cleaning purposes S A U
20. Floors are free of oil, water and foreign material S A U
21. Floors, walls, windows, and ceilings are cleaned periodically. S A U
22. ______________________ S A U
23. ______________________ S A U
24. ______________________ S A U
25. ______________________ S A U
26. Evaluation for the total rating for B. HOUSEKEEPING S A U

C. EQUIPMENT

1. Machines are arranged so that workers are protected from hazards of other machines, passing students, etc. S A U
2. Danger zones are properly indicated and guarded S A U
3. All gears, moving belts, etc., are protected by permanent enclosure guards S A U
4. All guards are used as much as possible S A U

C. EQUIPMENT (continued)

5. All equipment control switches are easily available to operator. S A U
6. All machines are "locked off" when instructor is out of the room. S A U
7. Brushes are used for cleaning equipment S A U
8. Nonskid areas are provided around machines S A U
9. Machines are in safe working condition S A U
10. Machines are guarded to comply with American Standards Association and local state code S A U
11. Adequate supervision is maintained when students are using machines and dangerous tools S A U
12. Tools are kept sharp, clean and in safe working order S A U
13. All hoisting devices are in safe operating condition S A U
14. Machines are shut off while unattended S A U
15. Adequate storage facilities for tools, equipment, etc., not in immediate use S A U
16. ______________________ S A U
17. ______________________ S A U
18. ______________________ S A U
19. ______________________ S A U
20. Evaluation for the total rating for C. EQUIPMENT S A U

D. ELECTRICAL INSTALLATION

1. All switches are enclosed S A U
2. There is a master control switch for all of the electrical installations S A U
3. Electrical outlets and circuits are properly identified S A U
4. All electrical extension cords are in safe condition and are not carrying excessive loads S A U
5. All machine switches are within easy reach of the operators. S A U
6. Electrical motors and equipment are wired to comply with the National Electric Code S A U
7. Individual cut-off switches are provided for each machine. S A U
8. Machines are provided with overload and underload controls by magnetic pushbutton controls S A U
9. No temporary wiring in evidence S A U
10. ______________________ S A U
11. ______________________ S A U
12. ______________________ S A U
13. ______________________ S A U
14. Evaluation for the total rating for D. ELECTRICAL INSTALLATION S A U

E. GAS

1. Gas flow to appliances is regulated, so that when appliance valve is turned on full, the flames are not too high .... S A U

2. Gas appliances are properly insulated with asbestos or other insulating material from tables, benches, adjacent walls, or other flammable materials .... S A U

3. No gas hose is used where pipe connections could be made. S A U

4. Gas appliances have been adjusted so that they may be lighted without undue hazard.................................. S A U

5. Students have been instructed when lighting gas appliances to light the match first before turning on the gas............ S A U

6. There are no gas leaks, nor is any odor of gas detectable in any part of the shop.. S A U

7. Shop instruction has been given concerning the lighting of gas furnaces operating with both air and gas under pressure.. S A U

8. When lighting the gas forge, goggles are worn....... S A U

9. When lighting the gas furnace, the following procedure is used: (a) light the match; (b) turn on the gas; (c) drop the match in the hole in top of the furnace.............................. S A U

10. In shutting down the gas furnace, the gas valve is closed before the air valve.. S A U

11. ________________________ S A U

12. ________________________ S A U

13. ________________________ S A U

14. ________________________ S A U

15. Evaluation for the total rating for E. GAS.......... S A U

F. PERSONAL PROTECTION

1. Goggles or protective shields are provided and required for all work where eye hazards exist.......................... S A U

2. If individual goggles are not provided, hoods and goggles are properly disinfected before use........................ S A U

3. Shields and goggles are provided for electric welding.. S A U

4. Rings and other jewelry are removed by pupils when working in the shop.. S A U

5. Proper kind of wearing apparel is worn and worn properly for the job being done.................................... S A U

6. Leggings, safety shoes, etc., are worn in special classes such as foundry, etc., when needed............................. S A U

7. Respirators are provided for dusty or toxic atmospheric conditions such as when spraying in the finishing room......... S A U

8. Provisions are made for cleaning and sterilizing respirators. S A U

9. Students are examined for safety knowledge ability.. S A U

10. Sleeves are rolled above elbows when operating machines. S A U

11. Clothing of students is free from loose sleeves, flopping ties, loose coats, etc. .... S A U

12. ________________________ S A U

F. PERSONAL PROTECTION (continued)

13. ________________________ S A U

14. ________________________ S A U

15. ________________________ S A U

16. Evaluation for the total rating for F. PERSONAL PROTECTION. S A U

G. INSTRUCTION

1. Shop Safety is taught as an integral part of each teaching unit. S A U

2. Safety rules are posted particularly at each danger station. S A U

3. Printed safety rules are given each student.......... S A U

4. Pupils take a safety pledge........................ S A U

5. Use of a safety inspector.......................... S A U

6. Use of a student shop safety committee.............. S A U

7. Use of safety contests.............................. S A U

8. Motion and/or slide films on safety are used in the instruction. S A U

9. Use of suggestion box.............................. S A U

10. Use of safety tests................................ S A U

11. Use of safety posters.............................. S A U

12. Talks on safety are given to the classes by industrial men. S A U

13. Tours are taken of industrial plants as a means of studying safety practices .... S A U

14. Periodic safety inspections of the shop are made by a student committee .... S A U

15. Men from industry make safety inspections of the shop S A U

16. Student shop safety committee investigates all accidents S A U

17. A proper record is kept of safety instructions which are given, preferably showing the signature of student on tests given in this area .... S A U

18. Rotate students on the Shop Safety Committee so that as many students as possible have an opportunity to participate... S A U

19. ________________________ S A U

20. ________________________ S A U

21. ________________________ S A U

22. ________________________ S A U

23. Evaluation for the total rating of G. INSTRUCTION S A U

H. ACCIDENT RECORDS

1. There is a written statement outlining the proper procedure when and if a student is seriously hurt...................... S A U

2. Adequate accident statistics are kept................ S A U

3. Accidents are reported to the proper administrative authority by the instructor .... S A U

H. ACCIDENT RECORD (continued)

4. A copy of each accident report is filed with the State Department of Education .... S A U

5. Accident reports are analyzed for instructional purposes and to furnish the basis for elimination of hazards.............. S A U

6. ________________________ S A U

7. ________________________ S A U

8. ________________________ S A U

9. ________________________ S A U

10. Evaluation for the total rating of H. ACCIDENT RECORDS. S A U

I. FIRST AID

1. An adequately stocked first aid cabinet is provided,.. S A U

2. The first aid is administered by a qualified individual S A U

3. The school has individuals qualified to administer first aid. S A U

4. ________________________ S A U

5. ________________________ S A U

6. ________________________ S A U

7. ________________________ S A U

8. Evaluation for the total rating of I. FIRST AID.... S A U

RECOMMENDATIONS

Code No.	

For additional copies in packets of 50 send $1.00 to National Safety Council, 425 North Michigan Avenue, Chicago, Ill. 60611

Printed in U.S.A.

Stock No. 429.73

6.2.4.

NAME________________________

SCHOOL YEAR______TO______

ACKNOWLEDGEMENT OF SAFETY INSTRUCTION

I have received SAFETY INSTRUCTION on the equipment listed below and I have passed the related SAFETY EXAM.* I fully understand the importance of the safety instruction and the proper operating procedures and that the violation of any one of them may be dangerous to myself and others.

My teacher has demonstrated to me the proper methods and safety precautions regarding the equipment listed below. I have qualified as an operator by demonstrating my ability to safely work with the equipment under the supervision of my teacher.

I am confident that I can operate the equipment safely and that I will report any unusual conditions or defective parts to my teacher immediately. If I am in doubt about any adjustment or operation of any equipment I will have the teacher check it out before proceeding with any work.

DIRECTIONS:

List each equipment below and include the date and your signature after you have received safety instruction, passed your safety exam* and demonstrated your ability to use it.

Name of Machine	Date	Student's Signature	Teacher's Initials
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

* If you are having difficulty in understanding the safety exam and relating it to the equipment ask your teacher if he can allow you to point out your answers on the machine. This maybe allowed only with the teacher's permission.

6.3. SAFETY TIPS AND EQUIPMENT

6.3.1

WAGE AND LABOR STANDARDS ADMINISTRATION

TECHNICAL REFERENCE

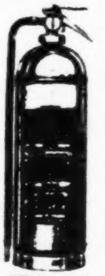
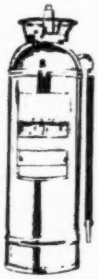
U. S. DEPARTMENT OF LABOR SAFETY TRAINING PROGRAMS

TR LS-393

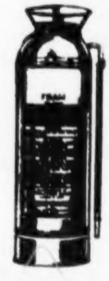
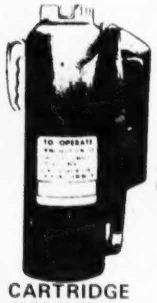
OOS 5-68

KNOW YOUR FIRE EXTINGUISHERS

KNOW YOUR FIRE EXTINGUISHERS

DEPARTMENT OF LABOR · UNITED STATES OF AMERICA	WATER TYPE			
	 STORED PRESSURE	 CARTRIDGE OPERATED	WATER PUMP TANK	SODA ACID
CLASS A FIRES WOOD, PAPER, TRASH HAVING GLOWING EMBERS ORDINARY A COMBUSTIBLES	YES	YES	YES	YES
CLASS B FIRES FLAMMABLE LIQUIDS, GASOLINE, OIL, PAINTS, GREASE, ETC. FLAMMABLE B LIQUIDS	NO	NO	NO	NO
CLASS C FIRES ELECTRICAL EQUIPMENT ELECTRICAL C EQUIPMENT	NO	NO	NO	NO
CLASS D FIRES COMBUSTIBLE METALS COMBUSTIBLE D METALS	SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING LABORATORIES			
METHOD OF OPERATION	PULL PIN-SQUEEZE HANDLE	TURN UPSIDE DOWN AND BUMP	PUMP HANDLE	TURN UPSIDE DOWN
RANGE	30' - 40'	30' - 40'	30' - 40'	30' - 40'
MAINTENANCE	CHECK AIR PRESSURE GAUGE MONTHLY	WEIGH GAS CARTRIDGE ADD WATER IF REQUIRED ANNUALLY	DISCHARGE AND FILL WITH WATER ANNUALLY	DISCHARGE ANNUALLY -RECHARGE

KNOW YOUR FIRE EXTINGUISHERS

FOAM	CARBON DIOXIDE	DRY CHEMICAL			
		SODIUM OR POTASSIUM BICARBONATE		MULTI-PURPOSE ABC	
 FOAM	CO 2	CARTRIDGE OPERATED	STORED PRESSURE	STORED PRESSURE	 CARTRIDGE OPERATED
YES	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	NO (BUT WILL CONTROL SMALL SURFACE FIRES)	YES	YES
YES	YES	YES	YES	YES	YES
NO	YES	YES	YES	YES	YES
SPECIAL EXTINGUISHING AGENTS APPROVED BY RECOGNIZED TESTING LABORATORIES					
TURN UPSIDE DOWN	PULL PIN - SQUEEZE LEVER	RUPTURE CARTRIDGE-SQUEEZE LEVER	PULL PIN-SQUEEZE HANDLE	PULL PIN - SQUEEZE HANDLE	RUPTURE CARTRIDGE-SQUEEZE LEVER
30' - 40'	3' - 8'	5' - 20'	5' - 20'	5' - 20'	5' - 20'
DISCHARGE ANNUALLY -RECHARGE	WEIGH SEMI-ANNUALLY	WEIGH GAS CARTRIDGE-CHECK CONDITION OF DRY CHEMICAL ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	CHECK PRESSURE GAUGE AND CONDITION OF DRY CHEMICAL ANNUALLY	WEIGH GAS CARTRIDGE-CHECK CONDITION OF DRY CHEMICAL ANNUALLY

US
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SAFETY
70

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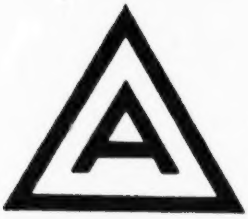
☆ GPO : 1968 O—311-303

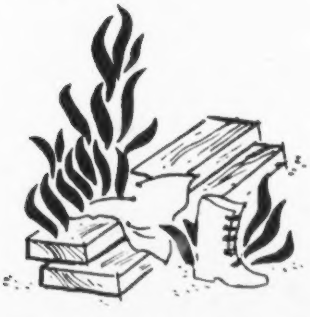
security
fire protection
safety

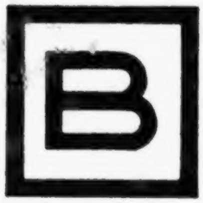
USE THE RIGHT TYPE OF FIRE EXTINGUISHERS FOR THE DIFFERENT CLASSES OF FIRES – LET THIS CHART BE YOUR PERMANENT REFERENCE

Facts from U.S. General Services Administration; artwork from Underwriters Laboratories

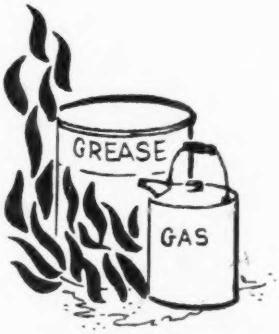


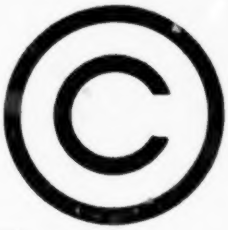
Each extinguisher bears a letter which indicates the class of fire it will work on successfully. If the wrong extinguisher is used, it may spread the fire, cause an explosion, or even electrocute someone. **CLASS A** fires (the symbol has a background of metallic or green) include those involving paper, wood, rubber, cloth — the ordinary materials used in most offices and classrooms. Water extinguishers usually weigh over 20 pounds each, but are effective against **CLASS A** fires. So are multipurpose dry chemical (ammonium phosphate) extinguishers, but which leave a residue which must be cleaned up immediately to avoid affecting the sprayed material. Underwriters' Laboratories, Inc., determines the size of the fire a given extinguisher will handle. This value is indicated by a numeral in front of the letter — for example, 2-A or 5-B:C. An extinguisher labeled 10-B:C will put out a fire twice the size of one which a 5-B:C extinguisher will handle. Water works only on **CLASS A**.

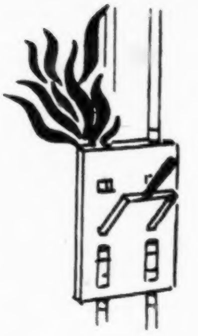




The **CLASS B** symbol appears on dry chemical (sodium bicarbonate or Purple K — potassium bicarbonate), multipurpose, or foam extinguishers. **CLASS B** fires involve flammable liquids and gases, grease, oil. The symbol always has a metallic or red background. Extinguishers suitable for **CLASS B** fires usually will fight **CLASS C** fires, too. A Purple K extinguisher has the greatest initial fire-stopping power of any of the units with the **B** symbol; but — as with multipurpose extinguishers — the residue must be cleaned up right after a fire is out, to avoid reaction with the sprayed materials. Automatic carbon dioxide extinguishers often are installed in kitchen hoods, to battle grease fires as soon as they start; but in a small closed area, carbon dioxide can displace the oxygen and asphyxiate people. Be sure that any extinguishers are serviced regularly and are refilled promptly after being used.







Choose school extinguishers with the advice of local fire authorities or your insurance company. Train teachers and staff in their use — and emphasize that when a fire occurs, an alarm should be turned in at once. The **CLASS C** symbol has a metallic or blue background; an extinguisher so labeled will fight fire in live electrical equipment. But cut the current promptly: no extinguisher will permanently put out an electrical fire which is being constantly fed more juice, while cutting off the current often will let the fire burn out quickly by itself. The **CLASS C** symbol always will be found on multipurpose, dry chemical, and carbon dioxide extinguishers — never on water or foam extinguishers. A special type of extinguishing agent for **CLASS D** fires, involving combustible metals, is available; but it applies only to sophisticated laboratories and metalworking shops in universities.

6.3.2

BUREAU OF LABOR STANDARDS

STUDENT REFERENCE

U. S. DEPARTMENT OF LABOR SAFETY TRAINING PROGRAMS

SR LS-125

OOS 9.65

INSPECTION TIPS

INSPECTING FOR SAFE USE OF PORTABLE ELECTRIC EQUIPMENT

General

1. Use equipment, flexible cord, and plugs which have been approved by the safety code enforcing authority. To satisfy the requirements for approval, most authorities specify that the equipment meet the standards of a nationally recognized testing laboratory, such as Underwriters' Laboratories, Inc., and bear the laboratory's label.

2. Article 250-45 of the 1965 National Electric Code states, "It is recommended that the frames of all portable motors which operate at more than 50 volts to ground be grounded." This section also explains under what conditions grounding of portable electric equipment is mandatory. Other codes, such as some State codes, make grounding of the metal frames of all portable electric equipment operated at more than 50 volts to ground mandatory.

Inspect

Prior to use, the equipment shall be given a careful visual inspection for the following:

1. See that the tool is clean and that the housing is not cracked or broken.

2. Make sure that the rubber sleeve, grommet, or spring is properly secured around the flexible cord to the housing in order to protect the wires and terminals inside the handle from excessive stresses.

3. Make sure that the metal tool housing is grounded by three-wire flexible cord and three-prong plugs.

4. Check the flexible cord and plug for damaged or broken insulation. A good test is to draw the flexible cord through your hand. If the flexible cord feels rough or chafed, check for breaks or cuts. If damaged, replace it -- don't splice.

Use

1. Flexible cords shall be protected against damage and not left on the floor where they may present a tripping hazard.

2. When extension cords are used, all connections shall be made prior to energizing the circuit.

3. An electric handtool shall not be suspended by its power cable, either in handling, use, or storage.

4. Electric handtools shall be placed in a safe location when they are put down for short periods during a job. They shall not be in contact with any part of the body in order to avoid a path to ground from another source of electricity. They shall not be placed near the edge of a table where they may be knocked off.

5. Areas where portable electric equipment is in use shall be kept clear of waste materials and rubbish.

6. It is especially important to keep portable electric equipment dry, and to keep flexible cords away from oil or grease.

7. If a flexible cord gets tangled or caught on a fixed object, do not pull it -- free it.

Repair

1. Repairs shall be made by qualified personnel only.

2. Flexible cord and plug replacements shall be properly wired. Mistakes have been fatal.

3. Tools shall be tested after repairs and periodically for:
   - (a) Circuit faults to ground.
   - (b) Proper grounding of the metal housing.
   - (c) Proper operation (no unusual noise, vibration, etc., rotation in right direction, etc.).

Special Precautions

1. Ordinary portable electric equipment shall not be used in or near a flammable atmosphere. The use of even explosion-proof portable electric equipment in flammable atmospheres is not generally recommended because of the hazards present by flexible cords and their connections. Safety authorities having jurisdiction should be consulted when portable electric equipment must be used in flammable atmospheres. Only temporary lighting and some instruments have been listed as explosion-proof by Underwriters' Laboratories, Inc. No electric handtools are listed. (See Articles 500-517 of the 1965 National Electric Code and the Hazardous Location Equipment List of Underwriters' Laboratories, Inc.)

2. When portable electric equipment is used in wet, damp or conductive locations, such as boilers, tanks, underground foundation areas, marine foundation work, it is recommended that 32-volt equipment, but not more than 50-volt equipment, be used. If higher voltages are used, comply with Article 250-45(d) of the 1965 National Electric Code which makes grounding mandatory.

PROPER GROUNDING IS YOUR BEST PROTECTION

6.4. FILMS

FILM SOURCES

PRIVATE AGENCIES:

1. AMERICAN RED CROSS, Hawaii State Chapter, 1270 Ala Moana Boulevard, Honolulu, HI 96814.
2. CASTLE AND COOKE, INC., 130 Merchant Street, Honolulu, HI 96813.
3. DOLE CORPORATION, 650 Iwilei Road, Honolulu, HI 96817.
4. HAWAIIAN AIRLINES, Honolulu International Airport, Honolulu, HI 96819.
5. HAWAIIAN ELECTRIC COMPANY, INC., 820 Ward Avenue, Honolulu, HI 96814.
6. HAWAIIAN SUGAR PLANTERS ASSOCIATION, 1527 Keeaumoku Street, Honolulu, HI 96822.
7. HAWAIIAN TELEPHONE COMPANY, 1130 Alakea Street, Honolulu, HI 96813.
8. LEWERS AND COOKE, INC., 550 Paiea Street, Honolulu, HI 96819.

GOVERNMENT AGENCIES:

9. DIVISION OF TRAFFIC EDUCATION AND SAFETY, DEPARTMENT OF TRANSPORTATION SERVICES, CITY AND COUNTY OF HONOLULU, City Hall Annex, Honolulu, HI 96813. Only general safety films are listed in this bulletin. For information on films on traffic safety and driver education, see their catalog of films.
10. HEALTH EDUCATION OFFICE, DEPARTMENT OF HEALTH, Kinau Hale, 1250 Punchbowl Street, Honolulu, HI 96813.
11. INDUSTRIAL SAFETY DIVISION, DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS, Room 203, 825 Mililani Street, Honolulu, HI 96813.
12. AUDIOVISUAL SERVICES SECTION, SCHOOL LIBRARIES AND INSTRUCTIONAL MATERIALS BRANCH, DEPARTMENT OF EDUCATION, 4211 Waialae Avenue, Honolulu, HI 96816.

SAFETY FILMS

1. AMERICAN RED CROSS, Hawaii State Chapter, 39 N. King Street, Honolulu, HI 96817 (Box 3948, Honolulu, HI 96812). Reservations limited to American Red Cross trained first aid instructors or instructor-trainers and for use in first aid classes. Approved by the Red Cross. Call 536-9621, Safety Program office, for reservations. Pick up and return it to this office.

   (a) "CHECKING FOR INJURIES"
   16 MM, B & W, 19 min., sound
   Demonstrates the correct techniques for examining a person for injury. Designed as a training film for use in first aid classes.

2. CASTLE AND COOKE, INC., 650 Iwilei Road, Honolulu, HI 96817. Call 548-6611 and ask for the film library, or call the Safety Dept. at 548-4838,(or write Box 2990, Honolulu, HI 96802).

   (a) "THE COMMUNICATIONS FOR SAFETY SERIES"
   This series of four films shows how lack of proper communication and communication techniques can slow and stall both safety work and production in industry. Should be shown in the order listed and preferably with use of the "Leaders Guide" and quizzes which it contains. All films are 16 MM, B & W, 10 min.

      1. "LET'S TALK ABOUT SAFETY"
      Shows supervisors how talking about safety can become a helpful habit that will pay off in improved morale and production.

      2. "TAKE A TALKIE BREAK"
      Shows supervisors an easy way to partially fulfill safety responsibility--use 10 minutes of the day to talk to several employees about safety on the job.

      3. "SETTING THEM STRAIGHT"
      Shows supervisors how to correct unsafe practices on the job without causing hurt feelings or annoyance.

      4. "LET EVERYBODY HELP"
      Shows supervisors that cooperation comes quickly when workers know their ideas on job safety improvement are wanted and listened to.

   (b) "FREIGHT HANDLING SAFETY"
   16 MM, B & W, 10 min., sound
   Deals with the actual handling of material including safe use of power trucks, dock plates, etc. Hazards are clearly portrayed.

(c) "THE KEY MAN SERIES"
This set of four films make up a complete presentation on how the supervisor can work for a safety program which will benefit his employees, his company and himself. Shows how a good safety program is the sum of "Little Things"....
All four films are 16 MM, B & W, 10 min., sound.

1. "POINT OF NO RETURN"
Step by step analysis of an accident, how it happened, how it affected workers, supervisor and management, and how good safety supervision very probably could have prevented the accident.

2. "YOU'RE THE KEY MAN"
Shows how one supervisor decided to put into practice things he knew about safety, but had neglected to do. It paid off in producing an improved safety record.

3. "IT'S THE LITTLE THINGS THAT COUNT"
Shows how the sum total of a lot of "little acts" by workers and supervisors add up to a safe plant and safe conditions for all.

4. "PEOPLE ARE THE PUZZLE"
Shows how a supervisor must develop an awareness and understanding of the people who work for him in order to help them work safely. Emphasis is on the importance of this aspect of supervisory activity in accident prevention.

(d) "MAINTAINING GOOD WORKING CONDITIONS"
16 MM, B & W, 9 min., sound.
Two supervisors describe how they improved working conditions in their specific areas.

(e) "RULES FOR TOOLS"
35 MM, sound film strip, 15 min.
Shows the four basic rules for safe use of hand tools and application of rules to various tools.

(f) "THE SAFETY AND THE FOREMAN SERIES"
This set of four films should be shown in order and a "Leaders Guide" which accompanies the films as well as prepared quiz material should be used to get the most effective use from this material. All films are 16 MM, B & W, 10 min.. sound.

1. "NO ONE ELSE CAN DO IT"
Points out clearly that the responsibility for accident prevention is a function of supervision and that the supervisor must recognize this fact and act upon it.

2. "FACT FINDING, NOT FAULT FINDING"
   A supervisor calls several employees "on the carpet" for what he terms carelessness. When he investigates and learns the facts, he realizes that the accident actually occurred from lack of supervisional follow-up on his part.

3. "FORESIGHT, NOT HIND SIGHT"
   Show that what reallly counts in accident prevention is finding out accident causes and eliminating them before the accident happens. A basic concept that every supervisor must learn.

4. "WHAT THEY DON'T KNOW CAN HURT"
   Shows the importance of good job training and close supervision to prevent accidents. Illustrates how misunderstood job instructions can lead to accidents.

(g) "SHOP SAFETY"
16 MM, B & W, 25 min., sound.
A U. S. Army film stressing safety and safe work practice in automotive maintenance and repair shops.

(h) "STOP THE FIRE THIEF"
16 MM, B & W, 20 min., sound.
Demostration of what happens when fire breaks out in an industrial plant.

(i) "TO LIVE IN DARKNESS"
16 MM, B & W, 13 min., sound.
Tells the story of three men who lost their sight through unsafe behavior.

(j) "TOOL SAFETY"
35 MM, sound film strip, 15 min.
Illustrates safe use of tools; filmed at Ewa Plantation.

3. HAWAIIAN AIRLINES, Honolulu International Airport, Honolulu, HI 96819. Call Public Relations at 842-3366, for reservations.

   (a) "IT'S UP TO YOU"
   16 MM, color 11½ min., sound.
   Emphasizes need for eye protection by showing eye injury and the subsequent surgical removal of the steel splinter from an eye. End of film shows types of eye protective equipment and why it is important to use "safety" glass in this type of protective equipment.

4. HAWAIIAN ELECTRIC COMPANY, INC., 820 Ward Avenue, Honolulu, HI 96814. Reservations are made by calling 548-7771, ask for the Safety Office.

   (a) "ELECTRIC POWER AND COMMON SENSE"
   16 MM, color, 28 min., sound.
   Emphasis is on the basic rules of electrical accident prevention. Shows dangers associated with power transmission lines from storms, auto collisions, unsafe acts and vandalism. Also care taken by electrical industry employees to make electricity safe for all.

   (b) "JUST PLUG IT IN"
   16 MM, color, 25 min., sound.
   Shows hazards associated with improper or nonexistent grounding in home, and other minor electrical hazards to avoid.

5. HAWAIIAN SUGAR PLANTERS ASSOCIATION, 1527 Keeaumoku Street, Honolulu, HI 96822. Call 536-2711, ask for library, for reservations. Pickup and return of these films is at Ideal Pictures, Film Library Department, 227 Mokauea Street, Honolulu, HI 96819.

   (a) "A CLOSED BOOK"
   16 MM, B & W, 26 min., sound.
   Designed to improve community and personal attitudes toward safe practices in traffic, in the home and in industry.

   Emphasis is on community action to improve accident prevention programs in the community.

   (b) "DECIDE TO BE SAFE"
   16 MM, B & W, 10 min., sound.
   Shows how deciding to be safe and to act safely pays off in comfort, peace of mind and better safety performance.

   (c) "GET A GRIP ON YOURSELF"
   16 MM, B & W, 10 min., sound.
   Tells how to control feelings so that they do not trick you into an accident.

(d) "HOW TO AVOID MUSCLE STRAINS"
16 MM, B & W, 15 min., sound.
Shows muscular systems in body and how to get best use from them Correct way to lift.

(e) "LET HABIT HELP"
16 MM, B & W, 10 min., sound.
Shows how to utilize habits to better safety performance.

(f) "SAFETY EVERYWHERE...ALL THE TIME"
16 MM, color, 22 min., sound.
Concentrates on importance of safe behavior at home, at play, as well as on the job.

(g) "SAFETY RECORD"
16 MM, B & W, 10 min., sound.
Story of a plant safety record, how it was made by cooperative efforts of workers and management.

6. **HAWAIIAN TELEPHONE COMPANY, 235 S. Beretania Street, Honolulu, HI 96813. Reservations should be made through the Safety Director, at 537-7111, or call him directly at 546-2558. Pickup and return of film is at the Plans and Training office, Shafter Flats.**

(a) "KNOWING IS NOT ENOUGH"
16 MM, color, 28 min., sound.
Tells how four states of mind called "imps" over-ride our safety consciousness in times of high pressure or stress and cause us to behave unsafely.

(b) "STANDARD FIRST AID" Parts I and II.
16 MM, color, 15 min., sound.
For use as training aid in teaching standard first aid course.
Part I - Dressings, bandages, shock, artificial respiration, and burns.
Part II - Control of bleeding, poisoning, broken bones, common emergencies.

7. LEWERS AND COOKE, INC., 550 Paiea Street, Honolulu, HI 96819. Call 847-9911, reservations made with the Customer Service Desk.

(a) "GRINDING WHEEL MARKINGS"
16 MM, color, 18 min., sound.
Explains how to use color code and other markings on grinding wheels to determine the particular type, size, grade, etc. for any particular grinding use.

(b) "GRINDING WHEEL SAFETY"
16 MM, color, 20 min., sound.
Shows safe practice in use of grinding equipment and what misuse or failure to follow safe practice can result in.

(c) "USE AND CARE OF CHISELS"
16 MM, B & W, sound.
Shows proper use of chisels.

(d) "USE AND CARE OF HACKSAWS"
16 MM, B & W, 18 min., sound.
Safe use and care of hacksaws.

(e) "USE AND CARE OF HAMMERS"
16 MM, B & W, 11 min., sound.
Safe practice and usage of hammers.

(f) "USE AND CARE OF PLIERS AND SCREWDRIVERS"
16 MM, B & W, 17 min., sound.
Safe use and care of these tools.

(g) "USE AND CARE OF PUNCHES, DRIFTS AND BARS"
16 MM, B & W, 14 min., sound.
Safe practice in use of these tools.

(h) "USE AND CARE OF WRENCHES"
16 MM, B & W, 15 min., sound.
Safe practice in use of wrenches and what abuses can result in.

8. **DIVISION OF TRAFFIC EDUCATION AND SAFETY, DEPARTMENT OF TRANSPORTATION SERVICES, CITY AND COUNTY OF HONOLULU, City Hall Annex, Honolulu, HI 96813. Call 546-2730.**

Only those films of general safety interest are listed in this bulleting. In addition, the division has a catalog of over 100 films on driver training, safe driving, traffic safety, etc.

(a) "THE SAFETY WISE SERIES"
This two-film series is directed at the individual employee and emphasizes individual responsibility for safety, individual's stake in accident prevention and role in accident prevention. All two films are 16 MM, B & W, 10 min., sound.

1. "NOT EVEN ONE CHANCE"
You meet J. T. O.(Just This Once) Jones, who takes chances and gets himself into trouble because he's in a hurry or for other "good" reasons. He decides that wrong attitudes that cause trouble need changing and finally changes his name to N. E. O. (Not Even One Chance) Jones.

2. "HELP YOURSELF TO SAFETY"
Show workers how blind spots can develop in your knowledge of your job and how those blind spots can lead to accidents. Tells the story of one worker who discovered how his blind spot led to an accident.

(b) "TEN LONG MINUTES"
16 MM, color, 13 min., sound.
A factory worker, not knowing what has happened to his family, waits out a telephone call from a police sargeant. This film covers vehicle maintenance and types of hazards in the home and office. Good for groups interested in off-the-job safety work.

9. HEALTH EDUCATION OFFICE, DEPARTMENT OF HEALTH, 1250 Punchbowl Street, Honolulu, HI 96813; phone 548-5885 or 548-5886 for reservations. In addition tothe films listed below, this unit offers an 89-page catalogue of films on public health, sanitation, and medical and nursing coverage. Films are offered free, subject to limitations of departmental need and on a first-come, first-served basis. It is advisable to make reservations well in advance of showing date as these films are in heavy demand. Unless otherwise indicated, films are 16 MM.

(a) "THE GIANT STEPS"
R.T., 13 min., B & W.
Stresses importance of learning safe habits early in life and responsibility of parents to teach safety even after child starts school.

(b) "HOME SAFETY"
Film strip, 35 MM, B & W, R. T.
Describes possible hazards in each room and ways to prevent accidents by eliminating these hazards.

(c) "HOW TO HAVE AN ACCIDENT IN THE HOME"
R. T., 8 min., color.
Donald Duck illustrates chances people take in the home and suggestions are made on how to avoid the accidents shown.

(d) "KNOWING'S NOT ENOUGH"
R. T., 27 min., color.
Theme of film is that 4 "imps," improving, impunity, impatience and impulsiveness interfere with safety knowledge and cause workers to violate safety rules. Emphasis is on being careful to prevent these "imps" from causing one to violate safety rules.

(e) "LET EVERYBODY HELP"
R. T., 10 min., B & W.
Shows supervisors that workers cooperate and they are made aware their assistance is wanted and appreciated. One of four in the "Communication for Safety" series and should be shown last.

(f) "LET'S PLAY SAFE"
R. T., 10 min., color.
Shows hazards and safe actions in a school setting.

(g) LET'S TALK ABOUT SAFETY"
R. T., 10 min.
Shows supervisors value of talking about safety as part of regular performance of duties. Should be shown as the first film in the "Communication for Safety" series.

(h) "RESCUE BREATHING"
R. T., 21 min., color.
Teaches the mouth to mouth technique and shows its use in six situations where this emergency method may be life saving. They are: Drawing, electrical shock, chest injury from compression chocking, drug induced stoppage and gas poisoning.

(i) "SAFE AT HOME"
R. T., 30 min., color.
Discusses the many types of accidents which can occur in the home and preventive measures for parents to take. Primarily for parent groups.

(j) "SAFETY BEGINS AT HOME"
Film treats on aspects of home safety relative to children.

10. INDUSTRIAL SAFETY DIVISION, DEPARTMENT OF LABOR AND INDUSTRIAL RELATIONS, Room 203, 825 Mililani Street, Honolulu, HI 96813.

Films are offered on a first-come, first-served basis subject to the division's safety training class needs. Reservations are made by calling 548-7511.

(a) "BARE MINIMUM"
R. T., 10 min., B & W. #6 of "Safety Management Series."
Shows supervisors the need for items like goggles, safety shoes and hard hats. Explains what supervisors can do in training and enforcing the use of these items.

(b) "DECIDE TO BE SAFE"
R. T., 15 min., B & W.
Shows how a positive attitude toward safety results in better safety performance.

(c) "DOWN AT THE OFFICE"
R. T., 15 min., B & W.
For line clerical and office personnel. A secretary and her boss find that some very minor matters can cause some very serious falls. Stress is laid on good housekeeping to prevent office slips and falls.

(d) "FACT FINDING, NOT FAULT FINDING"
#2 of the "Safety and the Foreman" series.
R. T., 10 min., B & W.
Emphasizes need for analyzing facts and determining causes of accidents to prevent recurrence rather than blaming someone for what has happened.

(e) "FORESIGHT, NOT HINDSIGHT"
# 3 of the "Safety and the Foreman" series.
R. T., 10 min., B & W.
Shows how a supervisor can learn to predict and prevent accidents before they happen rather than learning only from sad experience.

(f) "GET A GRIP ON YOURSELF"
#2 of "Personal Side of Safety" series.
R. T., 15 min., B & W.
Discusses simple rules for controlling feelings so that accidents at work can be prevented from this cause.

(g) "GUARD DUTY"
#7 in "Safety Management" series. (Machines and equipment guards.)
R. T., 10 min., B & W.
Reviews fundamentals of guarding. Discusses the kinds of motion of machines and their hazards to hands and arms. Ties in basics of guarding to the problems of guarding on actual machines.

(h) "HELP YOURSELF TO SAFETY"
#1 in "Safety Wise" series.
R. T., 15 min., B & W.
Shows how blind spots can develop in your knowledge of your job and how these blind spots can lead to accidents.

(i) "IT DIDN'T HAVE TO HAPPEN"
R. T., 15 min., B & W.
Shows how the unsafe work attitude and unsafe work habits of one employee result in the death of a fellow worker. Grim, but drives home the need for safe practices and proper guarding of powered equipment

(j) "LET HABIT HELP"
#5 in the "Personal Side of Safety" series.
R. T., 15 min., B & W.
Shows how to get rid of unsafe habits and to substitute safe ones.

(k) "LET THEM KNOW"
#3 in the "Safety Management" series. (Training Techniques.)
R. T., 10 min., B & W.
Covers checking for proper dress and safe equipment, how to deal with workers and how to make demonstrations.

(l) "MIND OVER MATTER"
# 4 in "Safety Management" series. (Materials handling)
R. T., 10 min., B & W.
Discusses materials handling accidents. Emphasis is on: inadequate protective equipment, improper position, oversize loads, insecure grip and illustrates techniques for proper lifting.

(m) "NO ONE ELSE CAN DO IT"
#1 in "Safety and the Foreman" series.
R. T., 10 min., B & W.
Deals with the foreman's responsibility for the administration of safety in the operations he controls and his role in accident prevention.

(n) "NOT EVEN ONE CHANCE"
#2 in the "Safety Wise" series.
R. T., 10 min., B & W.
Discusses how wrong attitudes can cause accidents and the need for revision of attitudes to improve accident prevention.

(o) "PLAN FOR PREVENTION"
#2 in the "Safety Management" series. (Accident reporting)
R. T., 10 min., B & W.
Sums up elements in a good accident report, shows how to use report to determine what should be corrected and illustrates what the supervisor should look for in making safety inspections.

(p) "RUN THE TEAM"
#1 in the "Safety Management" series.
R. T., 10 min., B & W (Role of Supervisor)
Discusses basic functions of supervisor in safety: Know accident experience , inspect for hazards, insure equipment is safeguarded and eliminate unsafe practices.

(q) "SAFE AS YOU KNOW HOW"
#3 of the "Safety Wise" series.
R.T., 10 min., B & W.
Explains how to recognize unsafe conditions.

(r) "SAFETY IS IN ORDER"
#5 in the "Safety Management" series. (Housekeeping and Maintenance) R.T., 10 min., B & W.
Discusses objectives in keeping things in order: accident prevention, better attitude among employees, saving time and materials, increasing production and points out things supervisors can do to carry out these aims.

(s) "SAFETY RECORD"
#3 of the "Personal Side of Safety" series.
R.T., 15 min., B & W.
Story of a plant safety record and how it was made.

(t) "SELL SAFETY"
#8 in the "Safety Management" series (Communications and Promotion) R. T., 15 min., B & W.
General ideas on how a supervisor can "sell" safety to his workers and some of the techniques to use in accomplishing this.

(u) "THE HIGH-LOW BID"
R. T., 26 min., color.
Construction industry centered film which depicts the four essentials in any accident program· management responsibility, safe place to work, supervisory training and employee participation.

(v) "TWO STEPS TO SAFETY"
#4 in the "Personal Side of Safety" series.
R. T., 15 min., B & W.
Shows how things we know or don't know affect our safety at work. Safety comes from knowing both your job and yourself. Shows how to learn about yourself.

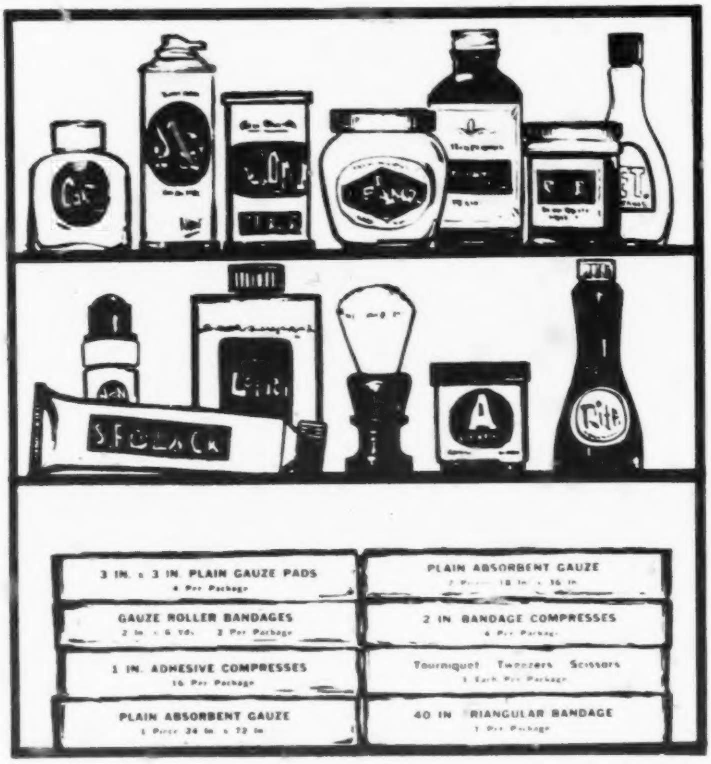
(w) "WHAT THEY DON'T KNOW CAN HURT"
#4 in the "Safety and the Foreman" series.
R. T., 10 min., B & W.
Stresses the importance of instructing workers in safe methods and outlines types of workers and best approach in instructing each type.

(x) "POINT OF NO RETURN"
#1 of the "Key Man" series.
R.T. 10 min., 16 MM, B & W.
The important message that the foreman's role in accident prevention is made up of "little things" which, taken together, comprise good supervision. This film shows a step-by-step analysis of an acccident and how good supervision could prevent it.

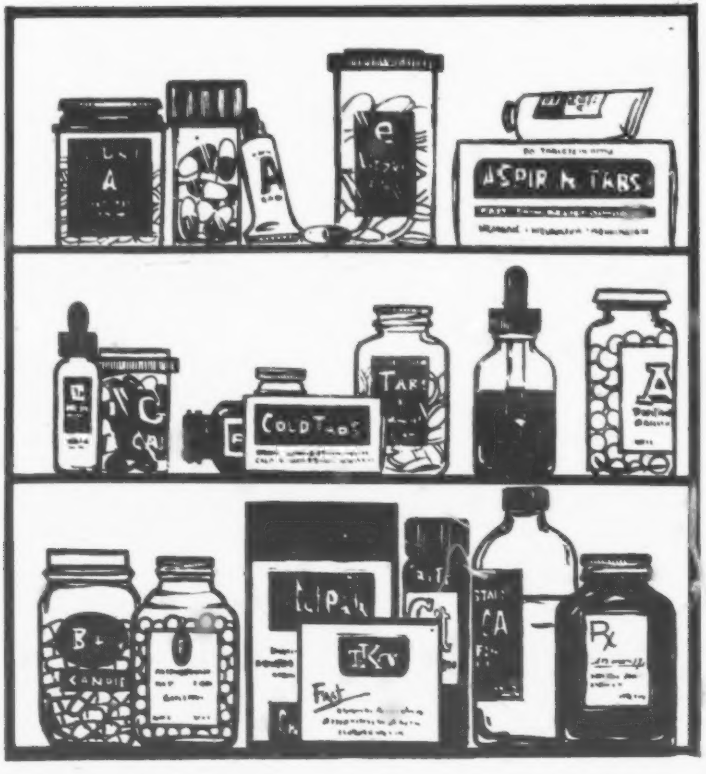
11. AUDIOVISUAL SERVICES SECTION, SCHOOL LIBRARIES AND INSTRUCTIONAL MATERIALS BRANCH, DEPARTMENT OF EDUCATION, 4211 Waialae Avenue, Honolulu, HI 96816.
Please refer to the combined listing of the Office of Library Services Film Collections--16MM FILM CATALOG/1970 for films under the appropriate subjects.

6.5. MISCELLANEOUS

FIRST AID TRAINING MEANS ACCIDENT PREVENTION


SFOLACK
FANO
3 IN. x 3 IN. PLAIN GAUZE PADS
4 Per Package
GAUZE ROLLER BANDAGES
2 In. x 6 Yds. 3 Per Package
1 IN. ADHESIVE COMPRESSES
16 Per Package
PLAIN ABSORBENT GAUZE
1 Piece 24 In. x 72 In.
PLAIN ABSORBENT GAUZE
18 In. x 36 In.
2 IN. BANDAGE COMPRESSES
4 Per Package
Tourniquet Tweezers Scissors
1 Each Per Package
40 IN. TRIANGULAR BANDAGE
1 Per Package

BATHROOM CABINET (GOOD)
MOUTHWASH
TOOTHPASTE
DEODORANTS
STERILE DRESSINGS
ETC.

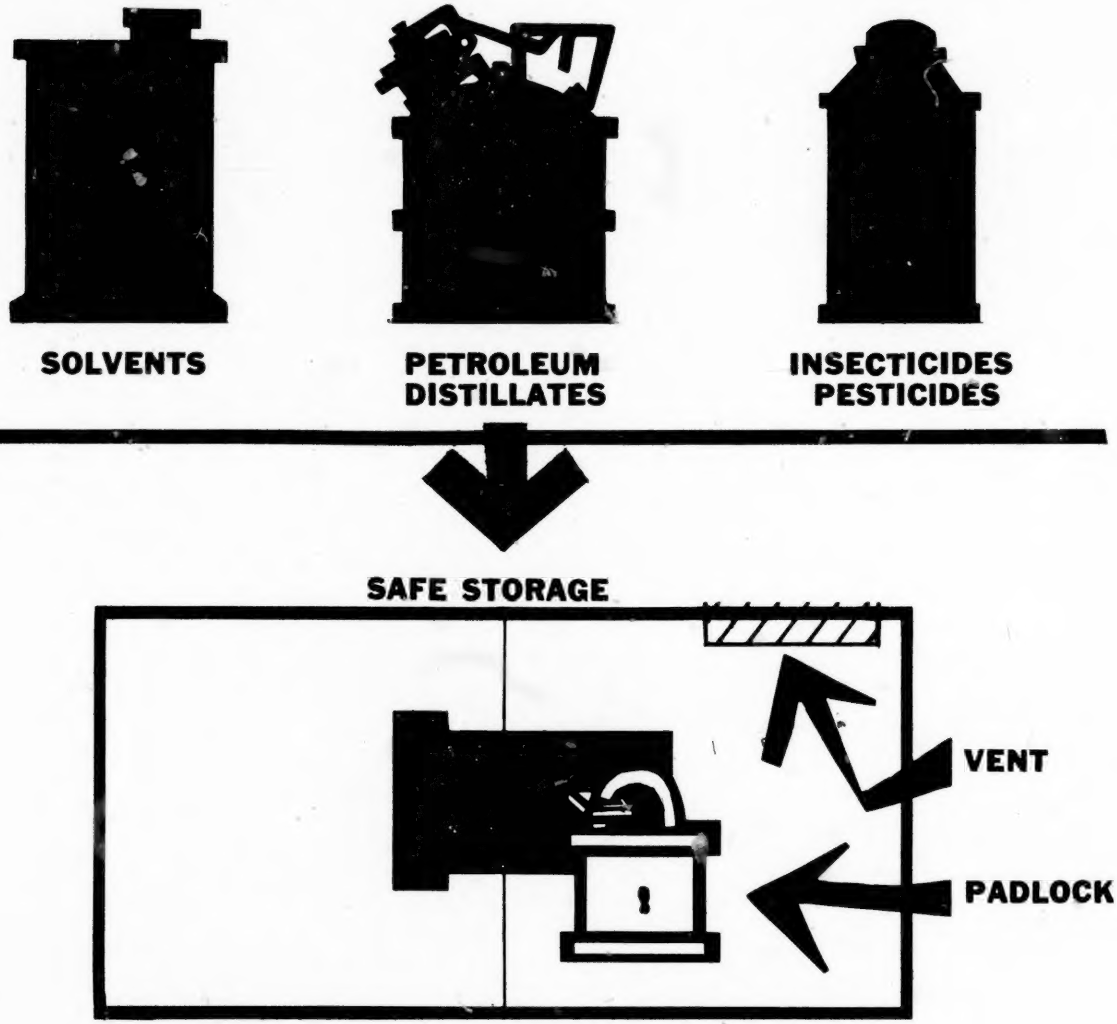

ASPIRIN TABS
COLD TABS
TABS
CANDIE
Rx

BATHROOM CABINET (BAD)
PATENT MEDICINES
PRESCRIPTION DRUGS
SUNDRIES

THE AMERICAN NATIONAL RED CROSS

6.5.3.

FIRST AID TRAINING MEANS ACCIDENT PREVENTION


SOLVENTS

PETROLEUM DISTILLATES

INSECTICIDES PESTICIDES

SAFE STORAGE

VENT

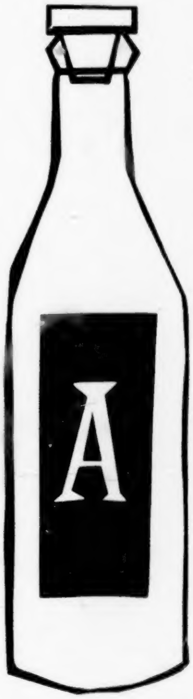
PADLOCK

THE AMERICAN NATIONAL RED CROSS

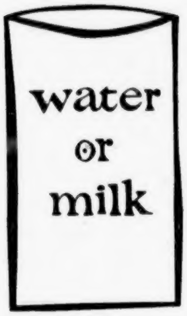
POSTER 1023D
APRIL 1961

FIRST AID TRAINING MEANS SAVING LIVES

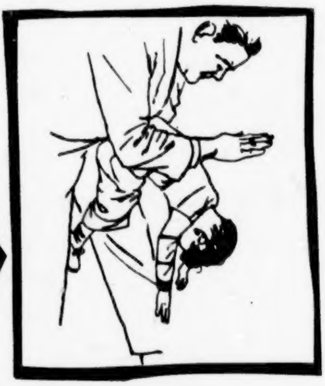
POISONING



ANTIDOTE:
READ AND
GIVE IF AVAILABLE ..... OTHERWISE GIVE



IF VOMITING IS REQUIRED,
HOLD CHILD IN THIS POSITION



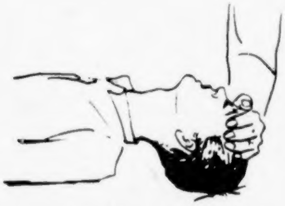
TAKE TO HOSPITAL

THE AMERICAN NATIONAL RED CROSS

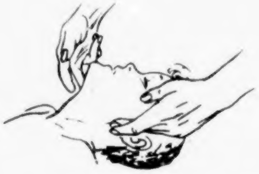
6.5.5.

FIRST AID TRAINING MEANS SAVING LIVES

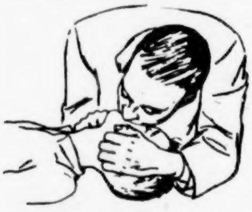
ARTIFICIAL RESPIRATION



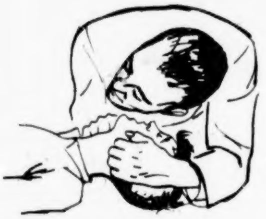
TILT HEAD SHARPLY BACKWARD.



LIFT JAW UPWARD AT ITS ANGLES.

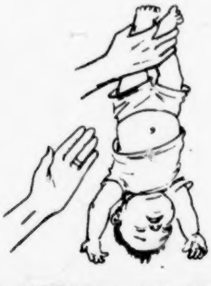


COVER BOTH MOUTH AND NOSE.
BREATHE INTO CHILD.

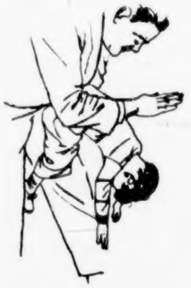


REMOVE MOUTH TO PERMIT EXHALATION

CLEARING AIR PASSAGEWAY



HOLD INFANT BY HEELS AND PAT ON BACK TO CLEAR AIRWAY.



HOLD CHILD WITH HEAD DOWN TO CLEAR AIRWAY STRIKE ON BACK

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6.5.6.

FIRST AID TRAINING MEANS ACCIDENT PREVENTION

INFANT'S TOYS SHOULD BE LARGER THAN HIS CLOSED FIST. SMALLER OBJECTS WILL BLOCK AIR PASSAGEWAY.

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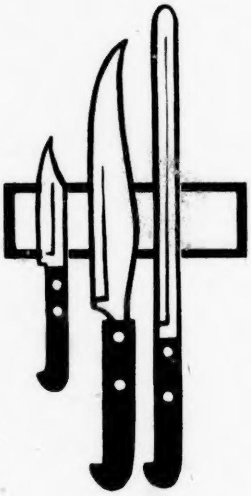
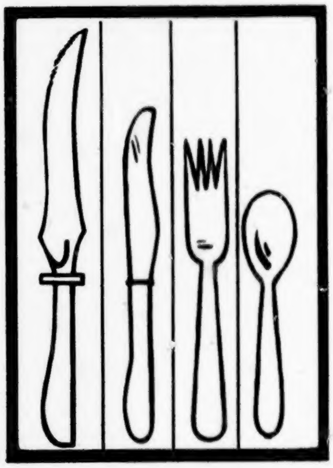
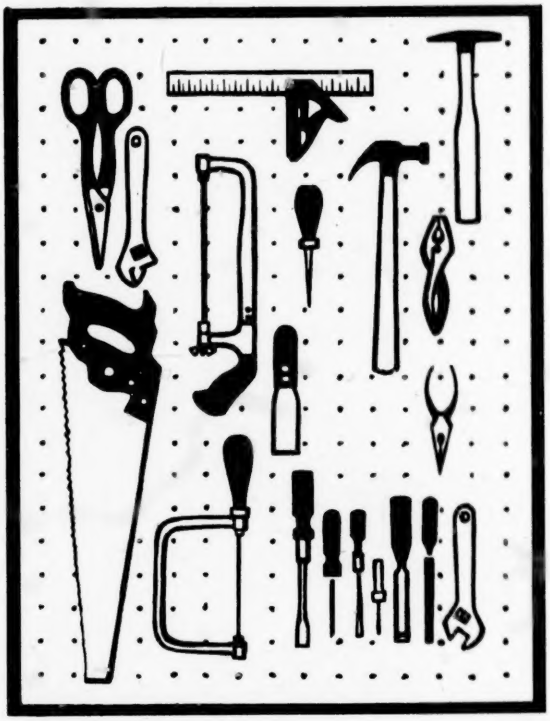
6.5.7.

FIRST AID TRAINING MEANS ACCIDENT PREVENTION





SHARP KNIVES
AND
TOOLS
SHOULD
BE
PROPERLY
STORED



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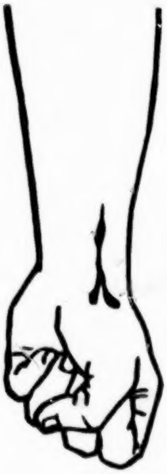
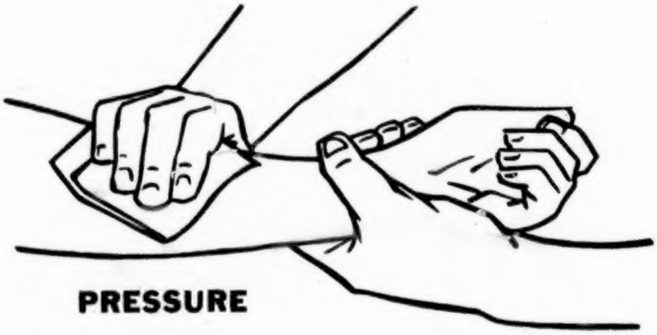
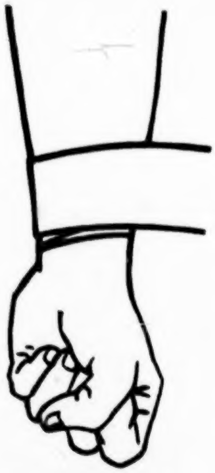
6.5.8.

FIRST AID TRAINING MEANS SAVING LIVES

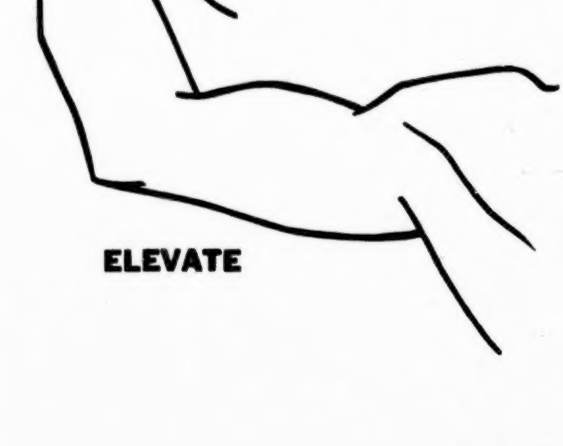




PRESSURE



BANDAGE



ELEVATE

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HOW YOU CAN PREVENT ACCIDENTS

FOLLOW INSTRUCTIONS

SAFETY RULES

- NO HORSEPLAY
- STAY AWAY FROM UNAUTHORIZED MACHINERY
- KEEP MACHINE GUARDS IN PLACE
- USE APPROVED METHODS

KEEP WORK STATIONS CLEAR

- PICK UP RUBBISH FROM FLOORS
- WIPE UP OIL OR WET SPOTS
- REPLACE TOOLS
- KEEP AISLES OPEN

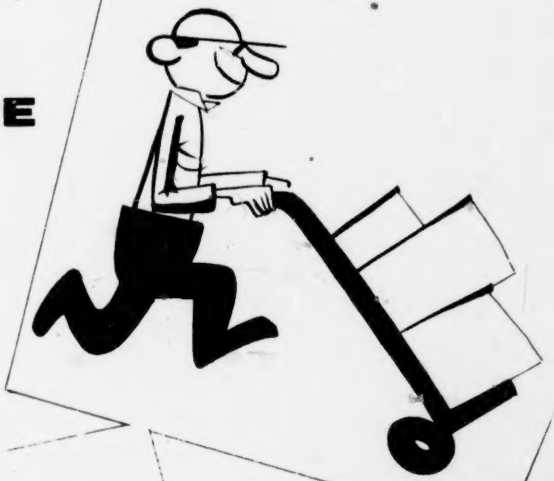
DRESS FOR THE JOB

- NO LOOSE CLOTHING
- NO TIES
- NO CUFFS ON TROUSERS
- NO RINGS
- KEEP SHOES IN GOOD REPAIR
- USE YOUR PROTECTIVE EQUIPMENT

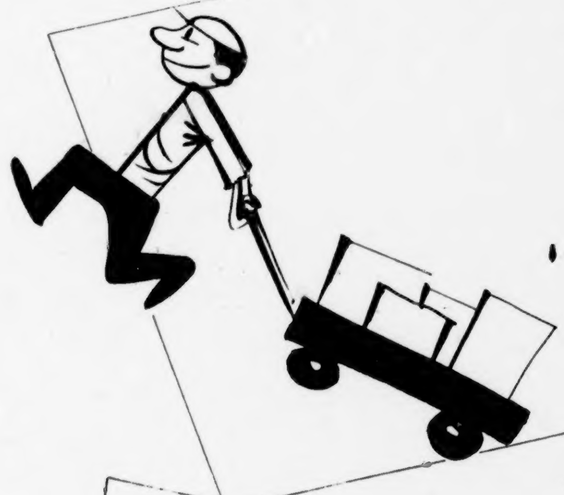
REPORT UNSAFE CONDITIONS AND EQUIPMENT

- BROKEN LADDER RUNGS
- FRAYED ELECTRIC CORDS
- DEFECTIVE TOOLS

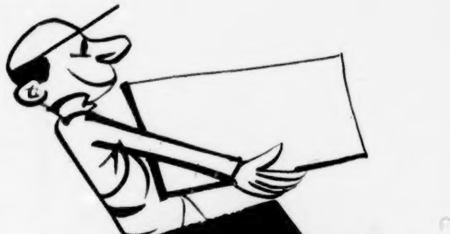
BE SURE YOU CAN SEE WHERE YOU'RE GOING WHEN YOU . . .



PUSH



PULL,



OR CARRY ANY LOAD